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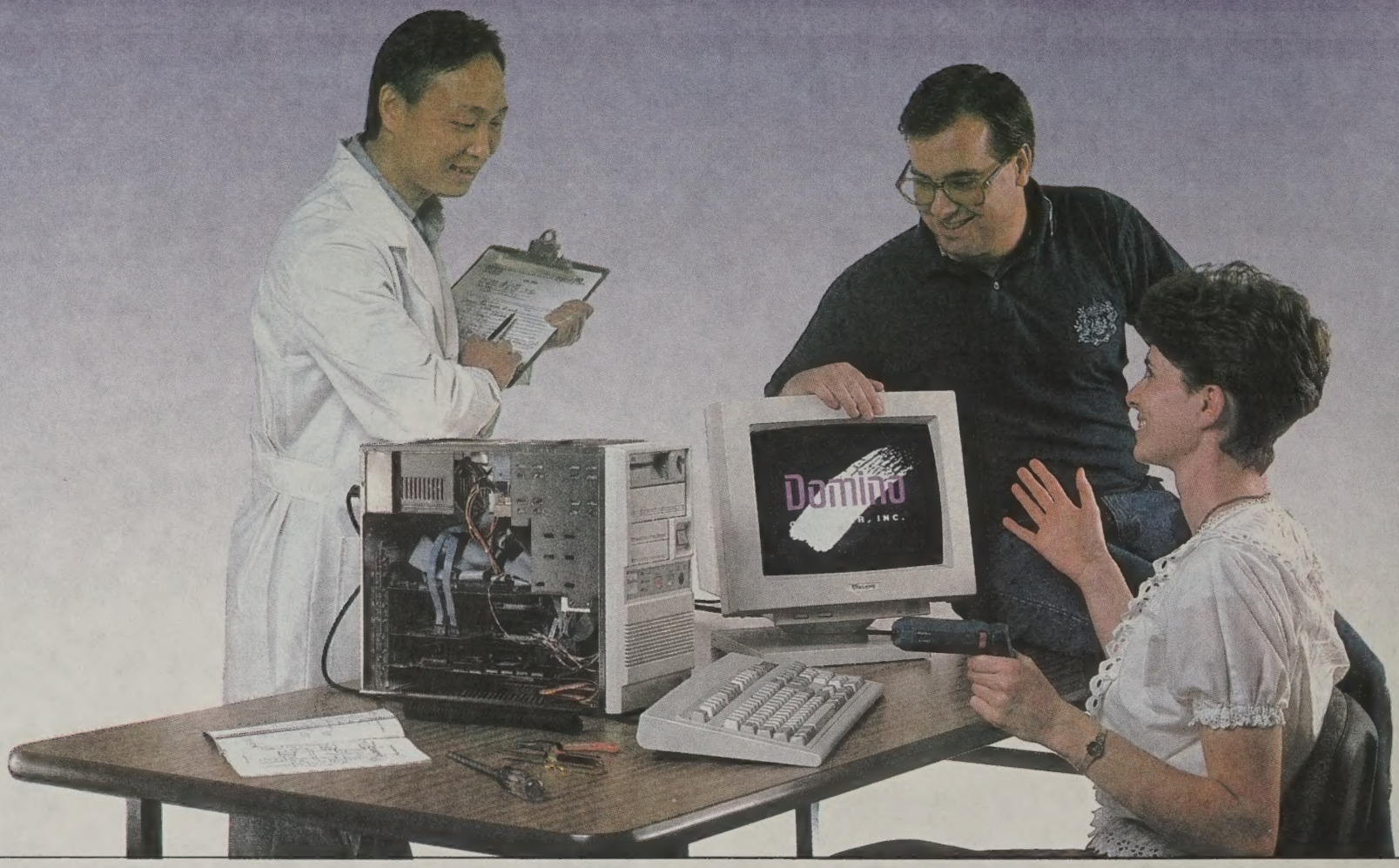

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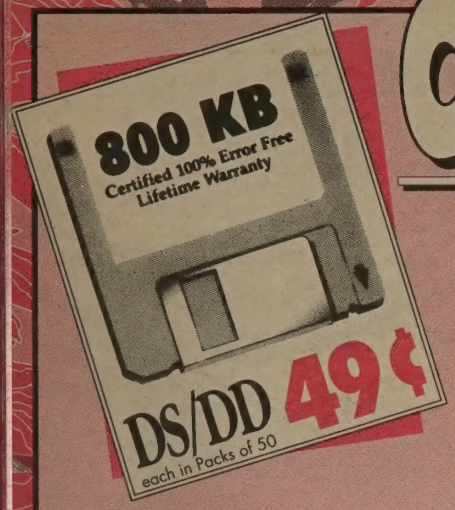

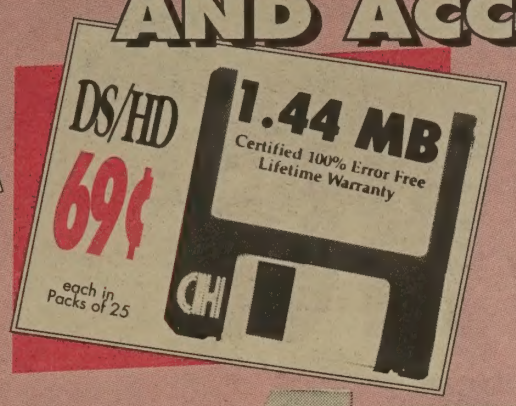

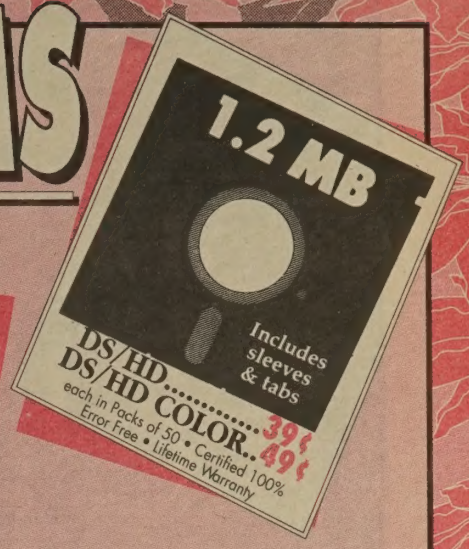

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- 64K Cache
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- 120 MB Hard Drive
- 1.2 & 1,44 Floppy Drive
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- 1 MB ATI Video Card
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- Intel Microprocessor
- 256K Cache
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- 1.2 & 1,44 Floppy Drive
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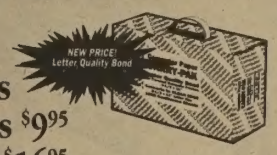

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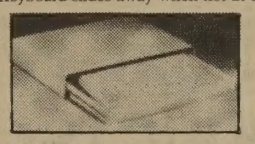

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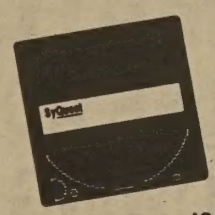

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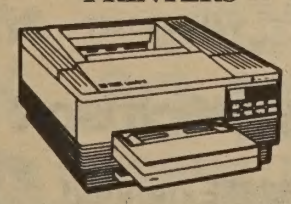

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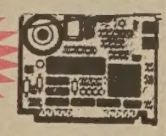

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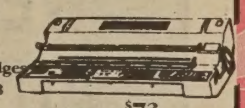

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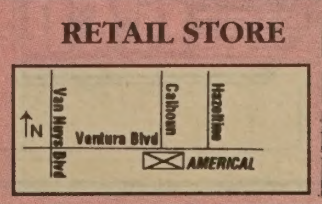

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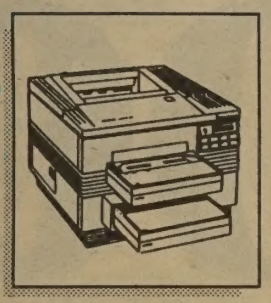

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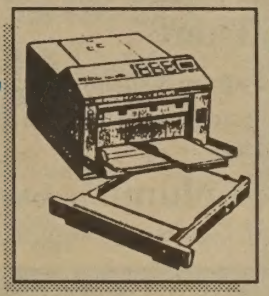

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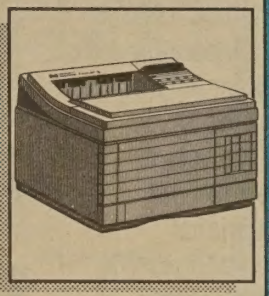

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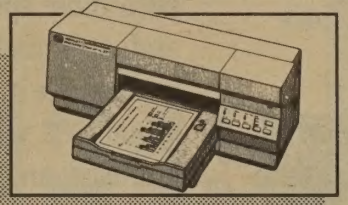

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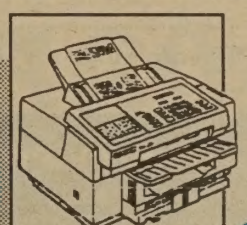

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A NOTE FROM THE EDITORS

By the time you read this, we'll already be caught up in the events of 1993, which, if 1992 is any indication, will be far from boring.

This issue features our traditional *MicroTimes* 100 list of people—*Fortune* 500 executives, fledgling entrepreneurs, programmers, writers, volunteers, and more—whose activities during the year helped shape the microcomputer industry and the community of users and service providers that surrounds it. We'd like to thank our readers for their valued input in helping us compile this list, and, as always, solicit *your* suggestions for next year's version.

We hope the year's off to a good start for all of you, and we're looking forward to the continued opportunity to bring you useful information in 1993.

—*ME*

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COVER STORY

The Sixth Annual Microtimes 100

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It's probably no surprise that Bill Gates of Microsoft and Andy Grove of Intel top this year's list of industry leaders—during 1992, they led their companies to even more spectacular success in the marketplace and, seemingly, an assured position of continued dominance in the world of emerging standards.

But 1992 was a year of future-creation, alliance-building, and advances in formerly esoteric technologies from encryption to virtual reality, and many other people, famous and obscure, had a significant impact on the rapidly changing state of personal computing. We hope you find this year's overview informative.

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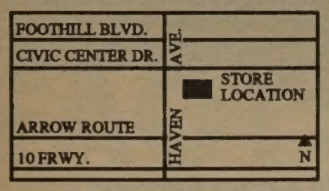

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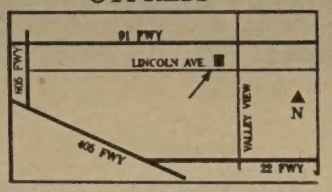

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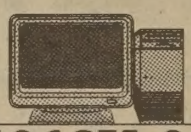

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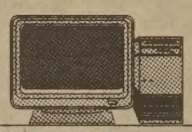

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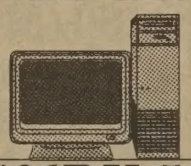

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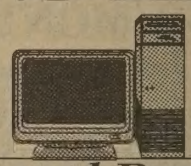

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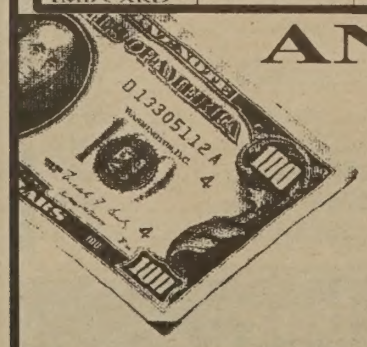

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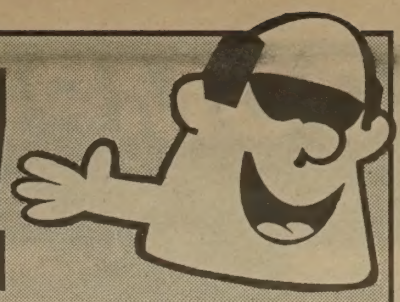

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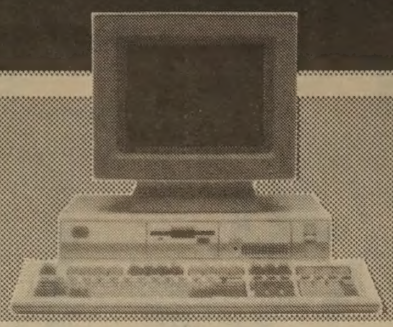

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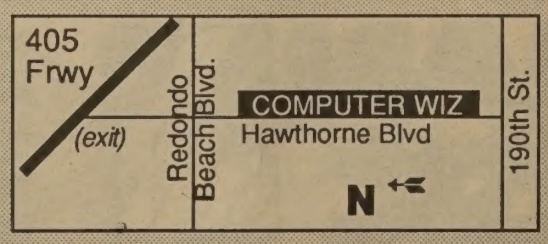

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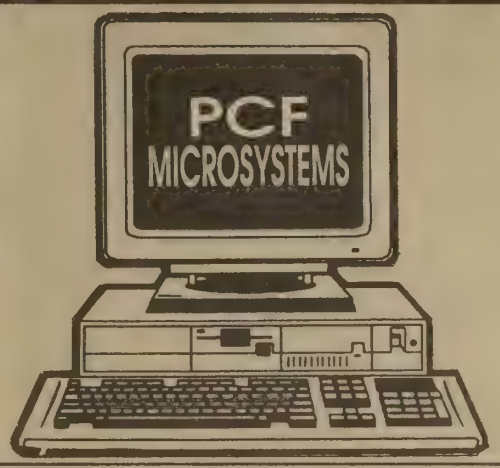

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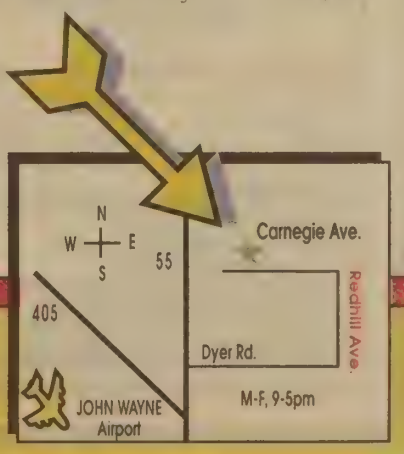

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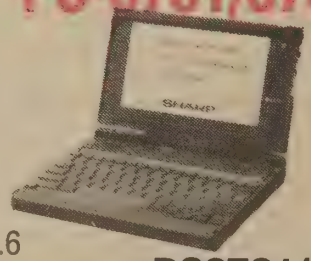

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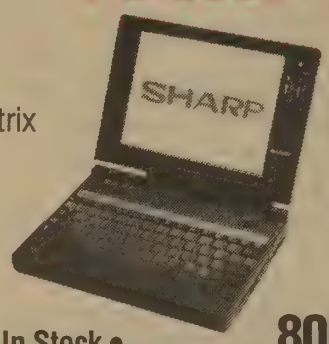

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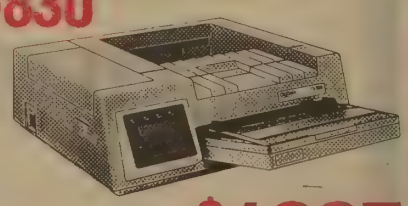

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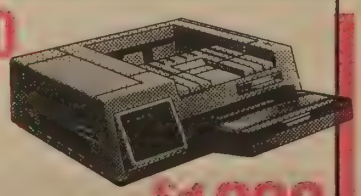

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1. Customers, are no longer willing to pay extra for service. The illusion is that all vendors provide comparable service and a similar degree of customer satisfaction.
2. Components with good specifications do not necessarily mean they are better components or the most appropriate. For example: non-interlaced monitors are not guaranteed to be flicker free; Faster RAM chips may ultimately cause timing problems.
3. Name brand components no longer guarantee durability nor reliability. Recycled parts, pushed-to-the-limit CPU's and incompatible peripherals, enable some vendors to advertise eye-catching low cost systems that have "good specs" on paper; but spend more time in the shop than in operation.

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- 4 MB RAM (Exp. to 32 MB)
- 2 Serial / 1 Parallel / 1 Game Port
- TEAC 5-1/4" Floppy Drive
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- Super VGA Color Monitor (1024 x 768 Res., .28 mm)
- Super VGA Display Card (1MB RAM, 1024 x 768)
- 80 MB Hard Disk
- Mid-Size Tower Case with 230W
- Full Size AT Enhanced Keyboard

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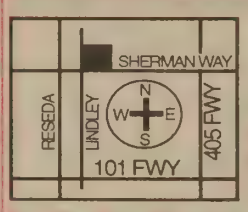

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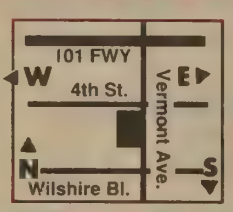

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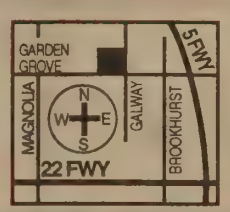

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INDUSTRY INSIGHT

Key Players Formalize Video Standards
Novell Considers Lawsuit Against Microsoft

BY PAUL HOFFMAN

GETTING IT ON YOUR SCREEN: VIDEO BECOMES MORE REAL

The software side of the video-on-your-PC has now been formalized by the major three players in the operating system business, but don't expect the *I Love Lucy* reruns to appear any time soon. Apple, Microsoft, and IBM have recently announced the system software needed for other developers to display television-quality movies on the PC in standard formats. Each company's software is incompatible with the others', and offers different levels of integration. None offers anything near real television quality on anything but the fastest PCs.

The biggest problem is the lack of interesting material. Even with good software and hardware, what is it that you really want to watch on your computer?

Copyright © 1993 by Paul Hoffman. All rights reserved. *Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on Internet (phoffman @well) or CompuServe (71545,346)". He also writes popular microcomputer books.*

The industry calls it "desktop video," a subset of multimedia. In the simplest case, you should be able to view, on your PC, a PC-compatible video sent to you by someone else, and hear the sound with it. The next step up would be the ability to stop the video, go backwards and forwards frame by frame, and copy individual frames or sequences of frames to other PC applications. The next advance is the ability to edit videos: mixing sources, adding titles, and stripping on sounds. Given that we live in the MTV age, adding special effects should also be easy.

Microsoft's entry, Video for Windows, runs as an OLE server so that all major Windows programs that have OLE capabilities can control the videos. For example, Word for Windows or Ami Pro can start a video running when you click on a particular part of a word processing document. Other programs might capture video frames from a video you are viewing to incorporate in their documents.

Apple made a bigger splash in the established multimedia community with its announcement of the long-awaited QuickTime for Windows. Since QuickTime for the Macintosh has been available for over a year, many developers have already created hundreds of movies. The movie formats for the PC and Mac are identical, so movies can be run on either without conversion. However, Apple did not make QuickTime work with OLE, limiting its attractiveness to the established Windows developer market. Apple has said that it will include OLE support and bigger windows within the next few months.

IBM, as expected, announced that its video offering will run only under OS/2. Since OS/2 is a multitasking operating system, you can watch many video clips simultaneously and still work in a different program, which might be useful in some business scenarios. However, IBM did not formally release the product; instead, it announced the beta-test version and said the full version would ship sometime in 1993.

All three systems have similar drawbacks, the two biggest being the size of the video files and the lack of interesting material. Even small videos take up dozens of megabytes on disk. For instance, QuickTime videos take up 4MB for every minute of video. This pretty much restricts video distribution to CD-ROMs, which still have not penetrated the market to any great extent. Even when distributed on CD-ROMs, however, the movies show up as a small patch on your screen about the size of a 3 x 5 card, giving the impression that all that disk space isn't really going for much. Also, the compression scheme used to store videos in all three formats is not that fast, so unless you have a fast CD-ROM player, the videos can appear jerky.

The biggest problem is the lack of interesting material. Even with good software and hardware, what is it that you really want to watch on your computer? Certainly not standard TV entertainment, since televisions give significantly higher quality. Some game software could easily benefit from added videos, but that is not a significant market, particularly if you require the user to have a CD-ROM player. To date, there is almost no business necessity for video. Sure, it might be fun to see someone's face as you hear them talking, but is that really worth all the overhead of a CD-ROM?

Of the three new video software toolkits, Microsoft's will probably become the leader within the year. Apple's lead with QuickTime will certainly make it a force to be reckoned with, but by no means assures Apple of long-term dominance. Microsoft has promised that Video for Windows movies will play well on the Macintosh, so neither company has any advantage there. IBM could be a wildcard: if the only real market for video is high-quality professional systems, users may opt for OS/2

due to its technical superiority, leaving the Microsoft-Apple competition to the low end only.

NOVELL CODE IN WINDOWS FOR WORKGROUPS

In a move that could seriously blunt the sales of Windows for Workgroups, Novell has accused Microsoft of shipping Novell's code, originally supplied for Windows 3.1, with the new Windows for Workgroups software. Novell is extremely upset at Microsoft's action, of which it was unaware, because Windows for Workgroups directly competes with both NetWare and NetWare Lite. Microsoft apparently did not discuss the code inclusion with Novell before the Windows for Workgroups announcement, to the point of taking Novell off of the beta test list so the networking company might not find out about the code use before the product was released. The two companies are negotiating, but Novell has indicated that it takes the matter very seriously.

Novell has raised the stakes in its fight with Microsoft by publicly looking for partners in a potential antitrust suit against Microsoft.

Novell is not known for being litigious, particularly compared to Microsoft, but it has said that it will take the issue to court if it is not resolved soon. According to Novell, the code supplied in the agreement was for Windows standalone software only, not for Windows bundled with additional networking software. In the past, Microsoft has been known to fudge the definition of what is and is not a version of software, and is apparently trying to say in this case that Windows for Workgroups is a version of Windows 3.1, even though all of its marketing says the opposite.

It is unclear why Microsoft took the tactic it did, given that Windows for Workgroups really only needs minimal NetWare connectivity to be attractive. The vast majority of Windows for Workgroups sales will be to users who are not on a Novell network and instead want a simple peer-to-peer connection. Companies that have already standardized on NetWare are unlikely to be interested in letting groups use Windows for Workgroups even if it is a better product. Thus, having simple NetWare interactivity (instead of full-blown core protocol compatibility) would suffice for almost all potential Windows for Workgroup customers.

Novell is understandably upset about Windows for Workgroups. From early reports, networks based on Windows for Workgroups are much easier to install and maintain than those based on NetWare Lite. Novell is planning to bundle NetWare Lite with its DR DOS operating system early next year, selling manufacturers a single-source package of networking and operating system. Hinted improvements to DR DOS will make it much more attractive than MS-DOS if Novell could just get its foot in the door of corporations.

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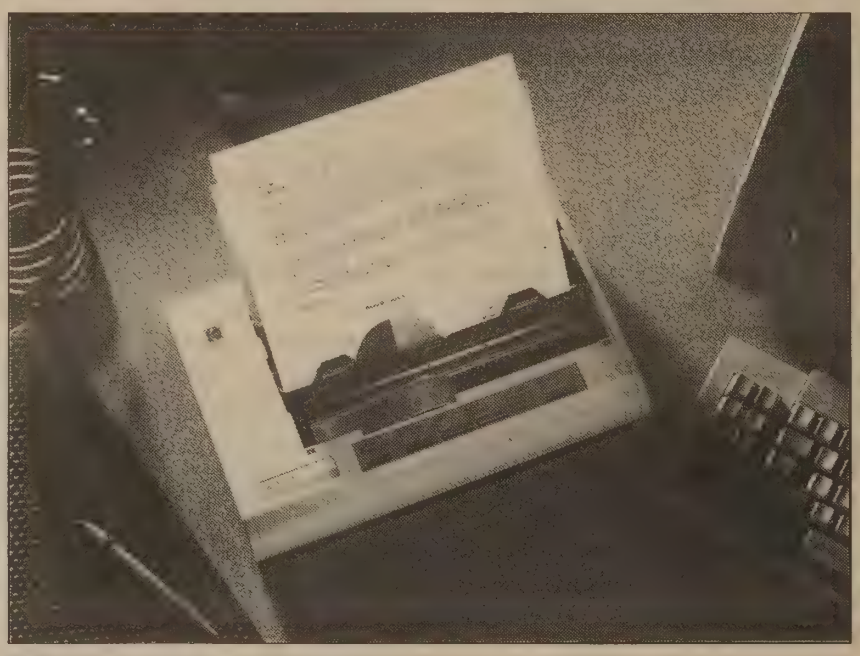

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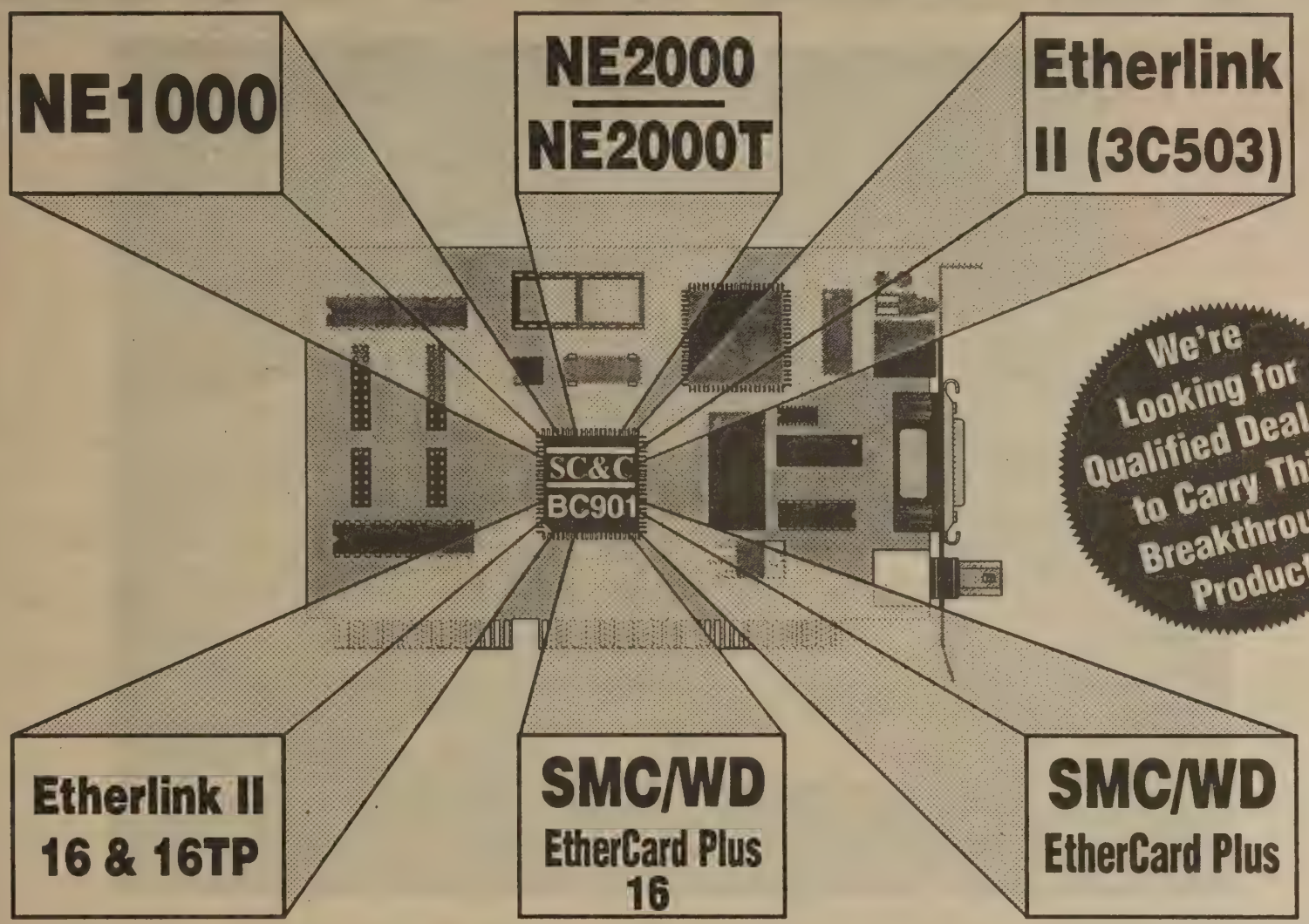

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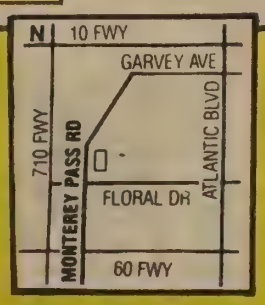

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Continued from page 20

Windows for Workgroups pretty much prevents that, in that it is a viable (if not downright attractive) peer-to-peer solution that even comes with Windows. The combined package may turn into Novell's only client software, greatly simplifying future Novell installations.

Microsoft may have goofed on another front. Novell says that, because Microsoft used the Novell connection code in Windows for Workgroups without notifying Novell, there are many incompatibilities in the product. They claim that some drivers, utilities, and backup don't work reliably with the way that Microsoft included the code. This, of course, irks Novell, since many users may blame the incompatibilities on them, not Microsoft. It will also cause a headache for Novell's technical support staff, who can only refer the problems to Microsoft and hope that their customers believe them.

Novell has raised the stakes in its fight with Microsoft by publicly looking for partners in a potential antitrust suit against Microsoft. This comes on the heels of the Federal Trade Commission's drawn-out investigation of Microsoft for possible prosecution under antitrust laws. The rumor mill has been rife with speculation that the FTC is almost ready to make a finding, but seasoned FTC watchers know that predicting the timing of the commission is virtually impossible. Novell does not need to wait for the FTC's findings to press a suit, however. If Novell can convince others that Microsoft's actions are more than just predatory, the facts that come out in the lawsuit could seriously hurt Microsoft's reputation. Even if Novell goes against Microsoft alone, the repercussions could be significant for both companies.

Hinted improvements to DR DOS will make it much more attractive than MS-DOS if Novell could just get its foot in the door of corporations.

Not that Novell is without problems it caused all by itself. Earlier this year, some students in the Netherlands discovered a major security hole in NetWare that allowed a regular user to piggy-back on a different user's connection and obtain confidential data from a server. Novell released a patch a few months ago, but it turns out that that patch didn't solve the problem. A second patch was issued that apparently fixes the security hole, but at the cost of a significant degradation to the speed of the network. Novell claims that the degradation could be as much as 10%, but others say that it could easily be 40%, and that even small networks can see more than a 10% speed decrease using the patch. ■

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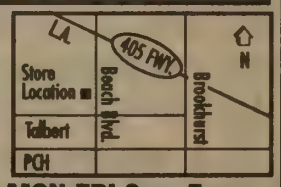

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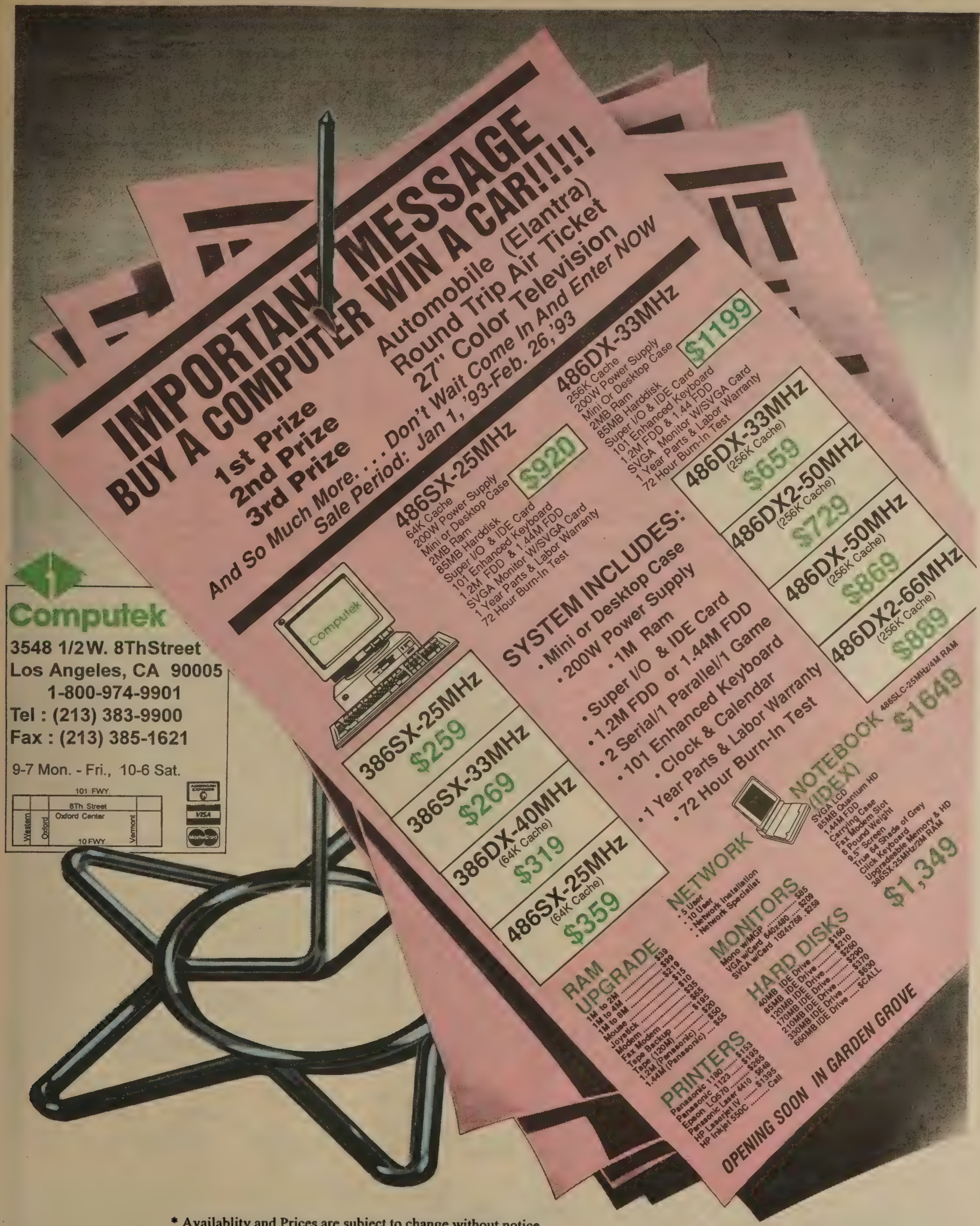

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MicroTimes Index Hits Record High

Fueled by Wall Street's latest bull run, the Microtimes Stock Index sprang to a record high of 3825.83 during the six-week period ended December 10.

The box score for our index of thirty-two high-tech concerns last month read as follows: up 289.8 points, or a hefty 8.2%. The Microtimes Stock Index was in good company as the S&P 500 (up 4.96% to 434.64), the NYSE Composite (up 4.89% to 238.97) and the NASDAQ Composite Index (up 10.32% to 658.93) all rose to record levels.

The reason behind last month's powerful rally: investors rushed to embrace technology stocks, believing these volatile issues will be among the best performers in a bull market. So far, these issues have been leading the market to higher ground, with no end in sight at the time of this writing.

Among the technology stocks enjoying the fruits of last month's rally:

LSI Logic topped the leaderboard with a resounding 55.4% rally en route to a new high of $10.88. Last month, the company said it sees solid profitability in the fourth quarter prompting LSI to cancel its planned holiday shutdown.

AT&T's stock advanced $5.38 a share, or 12.5%, before settling in at a new high of $48.50. At the time of this report, the telephone and computer giant was negotiating to buy a 33% stake in wireless phone giant McCaw Cellular Communications for $3.73 billion and consequently acquire an option for voting control. Specifically, the company plans to purchase 47 million shares of McCaw Cellular for $42 a share. The transaction would put AT&T in direct competition with the regional Bell companies for the first time since the 1984 breakup of the Bell system.

In Canada, Northern Telecom rallied 23% to close at $42.13 a share. Merrill Lynch raised its rating on the stock to "above average" from "neutral" after the company unveiled its first fully featured wireless business system, which is expected to improve the company's earnings in 1993.

On the sell side of the ledger, no stock fell further last month than Borland. The reasons: the company's third-quarter revenues are projected to be flat with year-ago results, which in turn forced many Wall Street firms to lower their rating on the stock to "neutral" from "buy." The result: Borland was the largest dollar and percentage-loser for the trading period, as it cascaded $11.25 a share, or 35.2%, to a new 52-week low of $20.75. ■

EXCH	COMPANY		TICKER SYMBOL	CLOSING PRICE 10/23/92	CLOSING PRICE 12/10/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH	P/E RATIO	ANNUAL DIVIDEND RATE	ANNUAL DIVIDEND YIELD	ANNUAL HIGH	ANNUAL LOW
	SOFTWARE											
OTC	Adobe		ADBE	30.50	32.00	1.50	4.92	16	0.32	1.00	68.50	25.25
OTC	Aldus		ALDC	14.50	14.25	–0.25	–1.72	23	0.00	0.00	44.25	10.25
OTC	Autodesk	(H)	ACAD	51.00	46.75	–4.25	–8.33	28	0.48	1.03	56.50	23.25
OTC	Borland	(L)	BORL	32.00	20.75	–11.25	–35.16	–	0.00	0.00	86.75	20.75
OTC	Informix	(H)	IFMX	27.38	33.50	6.13	22.37	25	0.00	0.00	33.50	5.88
OTC	Lotus		LOTS	19.25	20.50	1.25	6.49	12	0.00	0.00	38.75	14.75
OTC	Microsoft	(H)	MSFT	88.63	89.00	0.38	0.42	34	0.00	0.00	95.00	65.50
OTC	Novell	(H)	NOVL	31.00	30.75	–0.25	–0.81	40	0.00	0.00	33.50	22.50
OTC	Oracle	(H)	ORCL	23.13	22.88	–0.25	–1.08	47	0.00	0.00	24.75	12.00
OTC	Software Publishing		SPCO	8.38	9.00	0.63	7.46	–	0.00	0.00	26.25	6.75
OTC	Symantec		SYMC	11.75	14.00	2.25	19.15	52	0.00	0.00	51.00	5.88
	HARDWARE											
OTC	Apple	(L)	AAPL	48.75	57.25	8.50	17.44	13	0.48	0.84	70.00	41.50
OTC	AST Research		ASTA	18.50	19.63	1.13	6.08	10	0.00	0.00	24.50	11.25
NYS	Commodore		CBU	7.38	7.88	0.50	6.78	113	0.00	0.00	19.25	6.75
NYS	Compaq	(H)	CPQ	38.63	43.00	4.38	11.33	19	0.00	0.00	43.13	22.25
NYS	Digital Equipment	(L)	DEC	33.88	33.50	–0.38	–1.11	–	0.00	0.00	65.50	31.50
OTC	Dell	(H)	DELL	34.63	41.00	6.38	18.41	18	0.00	0.00	41.00	15.00
NYS	Hewlett-Packard		HWP	55.13	66.63	11.50	20.86	19	0.80	1.20	85.00	47.63
NYS	IBM	(L)	IBM	69.13	61.75	–7.38	–10.67	–	4.84	7.84	100.38	60.88
NYS	Silicon Graphics		SGI	23.63	26.50	2.88	12.17	–	0.00	0.00	29.75	14.13
OTC	Sun Microsystems	(H)	SUNW	32.00	33.25	1.25	3.91	22	0.00	0.00	36.13	20.75
NYS	Xerox		XRX	77.25	77.88	0.63	0.81	18	3.00	3.85	82.25	60.88
NYS	Tandy		TAN	26.75	29.88	3.13	11.68	14	0.60	2.01	31.25	22.25
	CPU'S											
NYS	Advanced Micro Devices		AMD	14.38	16.88	2.50	17.39	6	0.00	0.00	21.50	7.38
OTC	Intel	(H)	INTC	67.00	80.50	13.50	20.15	21	0.40	0.50	80.50	41.25
NYS	LSI Logic	(H)	LSI	7.00	10.88	3.88	55.36	–	0.00	0.00	10.88	4.88
NYS	Motorola	(H)	MOT	95.25	103.00	7.75	8.14	26	0.76	0.74	104.38	58.00
	COMMUNICATIONS											
NYS	AT&T	(H)	T	43.13	48.50	5.38	12.46	19	1.32	2.72	48.50	36.63
NYS	BellSouth Corp.		BLS	51.13	50.13	–1.00	–1.96	15	2.76	5.51	55.50	43.38
OTC	MCI	(H)	MCIC	36.25	37.88	1.63	4.48	18	0.10	0.26	38.50	26.75
NYS	Northern Telecom		NT	34.25	42.13	7.88	22.99	21	0.36	0.85	49.25	30.50
NYS	Pacific Telesis		PAC	40.13	44.88	4.75	11.84	17	2.16	4.81	45.00	36.88

KEY: NYS = NEW YORK ASE = AMERICAN OTC = OVER THE COUNTER
(H) = NEW HIGH REACHED IN PERIOD (L) = NEW LOW REACHED IN PERIOD

MARKET DIARY:

ADVANCES	24
DECLINES	8
UNCHANGED	0
NEW HIGHS	13
NEW LOWS	4

MOST ACTIVE ISSUES:

LARGEST DOLLAR GAINER	Intel	$ 13.50
LARGEST DOLLAR LOSER	Borland	$ –11.25
LARGEST PERCENTAGE GAINER	LSI Logic	55.36 %
LARGEST PERCENTAGE LOSER	Borland	–35.16 %

	CLOSE 10/23/92	CLOSE 12/10/92	NET CHANGE IN MONTH	PERCENT CHANGE IN MONTH
MICROTIMES STOCK INDEX	3536.03	3825.83	289.80	8.20
DOW JONES INDUSTRIAL AVERAGE	3207.64	3312.19	104.55	3.26
STANDARD & POOR'S 500 STOCK INDE	414.10	434.64	20.54	4.96
N.Y.S.E. COMPOSITE	227.83	238.97	11.14	4.89
NASDAQ COMPOSITE	597.30	658.93	61.63	10.32

CLOSING QUOTES FOR GRAPH:

DATE	MICRO TIMES	DOW JONES
05/08/92	3642.36	3369.41
06/05/92	3587.74	3398.69
07/02/92	3182.43	3330.29
07/31/92	3367.19	3393.78
08/28/92	3196.46	3267.61
09/25/92	3313.28	3250.32
10/23/92	3536.03	3207.64
12/10/92	3825.83	3312.19

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Care And Feeding Of Car-Jackers, And More

This Column Concerns What Isn't, But Could Be—And Vice Versa

BY JIM WARREN

In late September 1991, we detailed how to design theft-proof, keyless automobiles. Basically, we suggested having the engine computer query an n-character switch on the driver's dashboard for a driver-defined, driver-changeable numeric (or alphabetic) code

REALIZABLE FANTASIES

before it would run the engine. Well, Detroit—we're still waiting. Or are you gonna let Japan beat you to this one, too?

Or, techno-entrepreneurs could offer this as an aftermarket add-on for the decade or so it will take for Detroit to wheeze forward.

But that article was written before the new car-jacking rage. For those still blissfully ignorant, car-jackers are thieves who approach a driver at a stop light or parking lot and take their car and wallet/purse at gunpoint or knifepoint. (Of course, thieves only use registered guns and only use them in jurisdictions that have not banned guns.) For car-jackers, our design needs updating (prompted by a conversation with John Nagle of Menlo Park).

We hear that some cars—maybe some Ferraris?—now have a parking-attendant mode. When the driver enables it, the engine computer won't run over 20 mph nor travel more than one mile.

So let's put a car-jacker button or two in appropriate locations—say, adjacent to the door handle and as an out-of-the-way foot switch on the floor. Press the button and the engine computer initiates car-jacker mode: It runs normally for one mile, so the armed thieves can get well out of range of the driver they ejected. Then—unless the driver has keyed in a cancel code—the computer locks the doors, rolls up the windows, uniformly decelerates to a stop, squishes the seats to their maximum "up" and "forward" positions, turns the engine off, continuously honks the horn, blinks the lights and screams, "Help! I've been car-jacked! Call the police!," over a *loud*speaker mounted under the hood—synthesized speech in one or several driver-selectable languages.

In addition, I sort of like the idea of exploding teargas cartridges inside the car and perhaps activating surgical shears in the seats, but making life-threatening felons uncomfortable would probably be grounds for multimillion-dollar litigation in California.

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TRACKING THE WILY 'JACKER

It is a central, essential design characteristic of cellular-phone systems that they continuously track the approximate location of every cellular phone that is turned on. That's how they switch the call from one cell to the next as one cell's reception weakens while the next cell's reception strengthens. (Such switching is very inconvenient for the thousands of nosyvolks who use radio scanners to—illegally—eavesdrop on cellular conversations, but that's a different story.) This technically essential tracking feature offers potential danger and potential benefit.

Some years ago, Les Earnest, a pseudo-retired multi-decade AI

Press the button and the engine computer initiates car-jacker mode: It runs normally for one mile, so the armed thieves can get well out of range of the driver they ejected. Then the computer locks the doors, rolls up the windows uniformly decelerates to a stop...

(artificial intelligence) researcher from Stanford and member of the local ACLU Board of Directors, pointed out that such systems could pseudo-trivially be used to track and triangulate the location of cellular phones—and presumably their carriers. Interesting potential for covert surveillance or law enforcement—such as the FBI, which is already proposing that all phone systems be designed so they can wiretap at a keystroke, "whenever authorized by law," of course. (They quaintly title it a "Digital Telephony" proposal, also another story.)

The cellular tracking technology is already there, and the government can (presumably) already use it. So why don't the cellular companies offer an instant-on tracking service for those cellular customers who request it—such as disgruntled car-jack victims? Seems like the only possible addition to the vehicle's cellular hookup might be an optional second "on" switch—so the phone would continue to broadcast its location even if a knowledgeable 'jacker turned it off at its normal switch.

PROPERLY DESIGNED LAPTOPS

A few notebook-computer makers are finally offering *modern* computers: Their notebook systems are *designed* for expandability—just like all larger computers. The Outbound—the only legal Mac-alike

Continued on page 68

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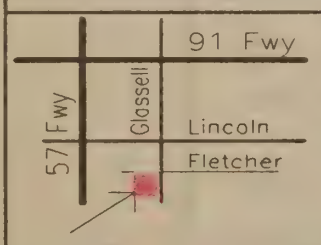

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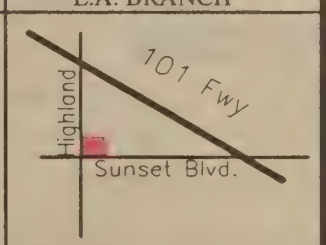

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Is There An ACE?

Yes, Virginia...

BY JOHN WHARTON

Dear Microprocessor Report:

I am a graduate student in Computer Science. Lately some of my classmates have begun making fun of the Advanced Computing Environment. They say it doesn't exist. My adviser says, "If you read it in Microprocessor Report, *it must be true." Please tell me the truth. Is there an ACE?*

Virginia Matsushita
Columbia University

Virginia, your colleagues are wrong. They have fallen victim to the self-delusion that comes from failing to make a dent in the goings-on of the real world. They do not believe in an operating system they cannot revise to suit their every whim, and they feel no software can succeed that's not totally incomprehensible to the user. The minds of all academics are small, Virginia—BS or PhD—compared to the strategic acumen of an MBA or CEO. In the real world of business, their beloved UNIX workstations are a mere curiosity, a footnote, a drop in the bucket—a mote in the eye of a gnat, lying dead in the dust bin of history—as compared with the boundless sales of DOS-based notebooks, laptops, and PCs.

You can hold up the Microsoft emperor and show that he wears no clothes, but software buyers care not.

But worse, your colleagues are cynical, to question what others accept. In a simpler era they may have taunted their friends that Santa Claus didn't exist, despite the classic essay in the 1887 *New York Sun.*

But yes, Virginia, there *is* a Santa Claus, and yes, there is an ACE. It exists just as surely as 640K limits, incompatible TSRs, and the "C>" prompt exist, and you know the vital role *they* play in preserving traditions of old. Alas! How dull and dreary this field would be if ACE were not to exist. It would be crippled as the legions of 486s waiting mindlessly for printers to acknowledge each byte, and as cloudy as the future of MIPS. The most powerful CPUs ever, then, might never achieve their goal.

Not believe in the promise of ACE? You might as well not believe in Windows/NT, or OS/2, or "Pink"—or in Fairchild, RCA, and Bell. Would so many sober-minded companies *really* stake their futures on a vision with no proven merit? Your adviser could assign all the students in Columbia to search for a single complete, comprehensive specification, or a single production system, or a single compliant application, but so what if they came away empty? What would that prove? The commitment of consortium members may dwindle, but that's no sign

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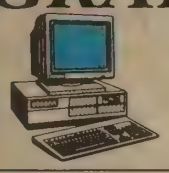

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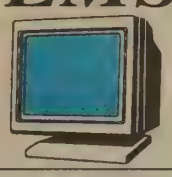

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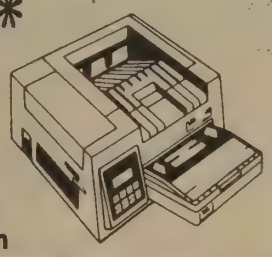

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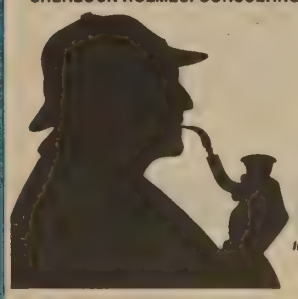

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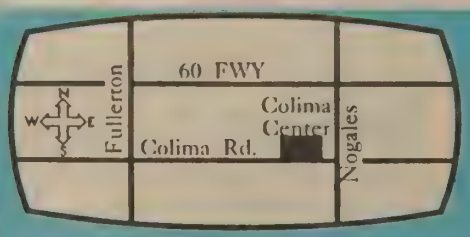

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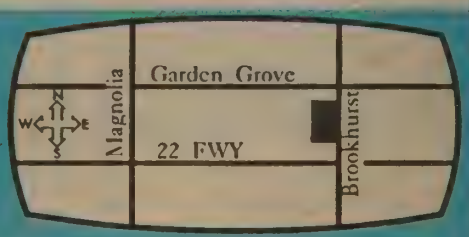

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ACE's future isn't bright.

The most real things in this field are often things no one can see. Have you ever seen a start bit, or page tables in RAM, or directory tracks on a disk? Have you ever, ever seen *anything* inside a hard-disk shell? Of course not, but that's no proof there's nothing there. No one has ever seen so much as a *product announcement* from NexGen, much less an actual part, but microprocessor groupies still look forward each year to hearing their latest plans. No one can conceive or imagine the wonders that exist, unseen and unseeable, in the minds of those who sell vapor.

You can hold up the Microsoft emperor and show that he wears no clothes, but software buyers care not. When a vacuum opens up, something rushes in, be it the fragrance of spring, or a stifling dreck. Natural laws exist, laws which must be obeyed. But once a void is filled, the Windows of opportunity close. Marketing clout builds an inertia which not even the most technically superior product, from the strongest workstation vendor, could *ever* hope to deflect.

Once a void is filled, the Windows of opportunity close.

Only optimism, arrogance, and desperation—and yes, Virginia, a total disregard for responsibility to investors—would lead anyone to challenge the anticipated juggernaut of ACE, and come away with their spirits intact. But is all this real? Ah, yes, Virginia, in all this glorious field, not a single other force is so real and so forboding.

The promise of ACE exists, and it will continue to exist, for as long as the public wants to believe in software interchangeability across all hardware platforms. And it will thrive, and expand, and grow, Virginia, until it encompasses every ABI and system platform the market thinks it wants. In time, every prized feature and optional standard of every consortium founder may find its way under the unified ACE umbrella, and be able to claim compatibility under the continuously evolving spec.

No ACE! Lord, but that that were so! But the promise of ACE is here to stay. A thousand years from now, Virginia, nay, *ten thousand years from now,* it may still be MS-DOS that owns the OS market, and runs on your wristwatch PC. But it will be the impending promise of ACE, even then, that will keep users' hopes alive. ■

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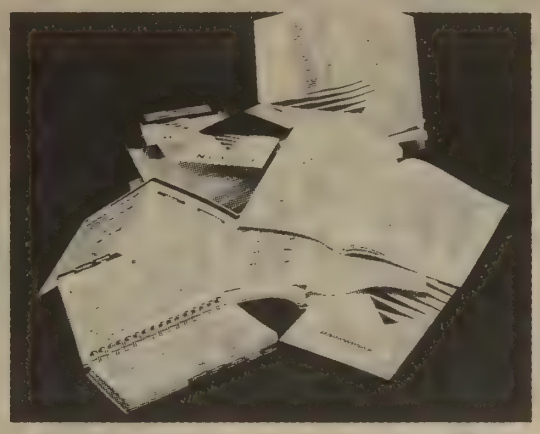

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BUSINESS SOLUTIONS

Franklin Digital Book System-1

Megabytes On The Go

The Franklin DBS-1: Books on the go.

BY MITSU HADEISHI

In his 1979 work *The Hitchhiker's Guide to the Galaxy*, Douglas Adams popularized the notion of the go-anywhere electronic book which, when hooked to the Galactic Net, would be updated with voluminous information from all over the Galaxy about almost everything imaginable.

We're finally beginning to see devices which, while far from matching Adams's imaginary creation, at least begin to include some of its features. We're approaching a vision of wireless network connectivity, where users in vehicles or on foot, wherever they happen to be, will be able to connect with other people and information databases. Unfortunately these wireless networks will, at least at first, be somewhat expensive to use, and intended only for small bursts of information such as traffic and weather reports, sports results, and the like.

Another approach promises to solve the problem in another way—rather than accessing these databases via wireless networks, you would carry them around with you like a book. This approach lets you distribute tens, even hundreds, of megabytes of information in compact, portable form, using current technology. Products such as the Sony Data Discman provide this level of functionality for the digital user-on-the-go, allowing people to access databases recorded on CD-ROMs.

However, the CD-ROM approach has some drawbacks—the high cost of the players (this will go down), the fact that they include moving parts (which have a tendency to break down or become misaligned), and the fact that they are vulnerable to vibration and shock when you're in a car or walking on foot.

Another technique for digital distribution of data is solid-state ROM cards, which can be plugged into palmtop organizers and computers such as the Sharp Wizard and the increasingly large line of PCMCIA-compatible machines such as the HP 95LX. As a variation on this technique, Franklin Electronic Publishers, Inc. has devised a machine whose sole purpose is to play back these ROM-card-based "electronic books," Because of its single-purpose design, the machine is quite small and relatively cheap. Franklin calls this the Digital Book System-1.

RESOURCES:

Digital Book System-1
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DBS-1

The Digital Book System-1 (hereafter referred to as the DBS-1) is a tiny palmtop with only one purpose: reading ROM cards with various kinds of information published by Franklin Electronic Publishers. It has 32K of RAM and no organizer functions at all, except for a tiny little notepad you can use to write down messages (only one message at a time, however). So don't throw out your Sharp Wizard just yet.

Each ROM card is capable of storing up to 45MB using Franklin's proprietary compression algorithm. The unit is small, just 3" x 5" x .5", but the keyboard is surprisingly easy to use. Many full-fledged palmtops larger than this unit could benefit from such an easy-to-use keyboard design. The display is 5 lines by 26 characters, and is capable of displaying bit-mapped graphics, though graphics are used only sparingly on the two ROM cards that come with hardware.

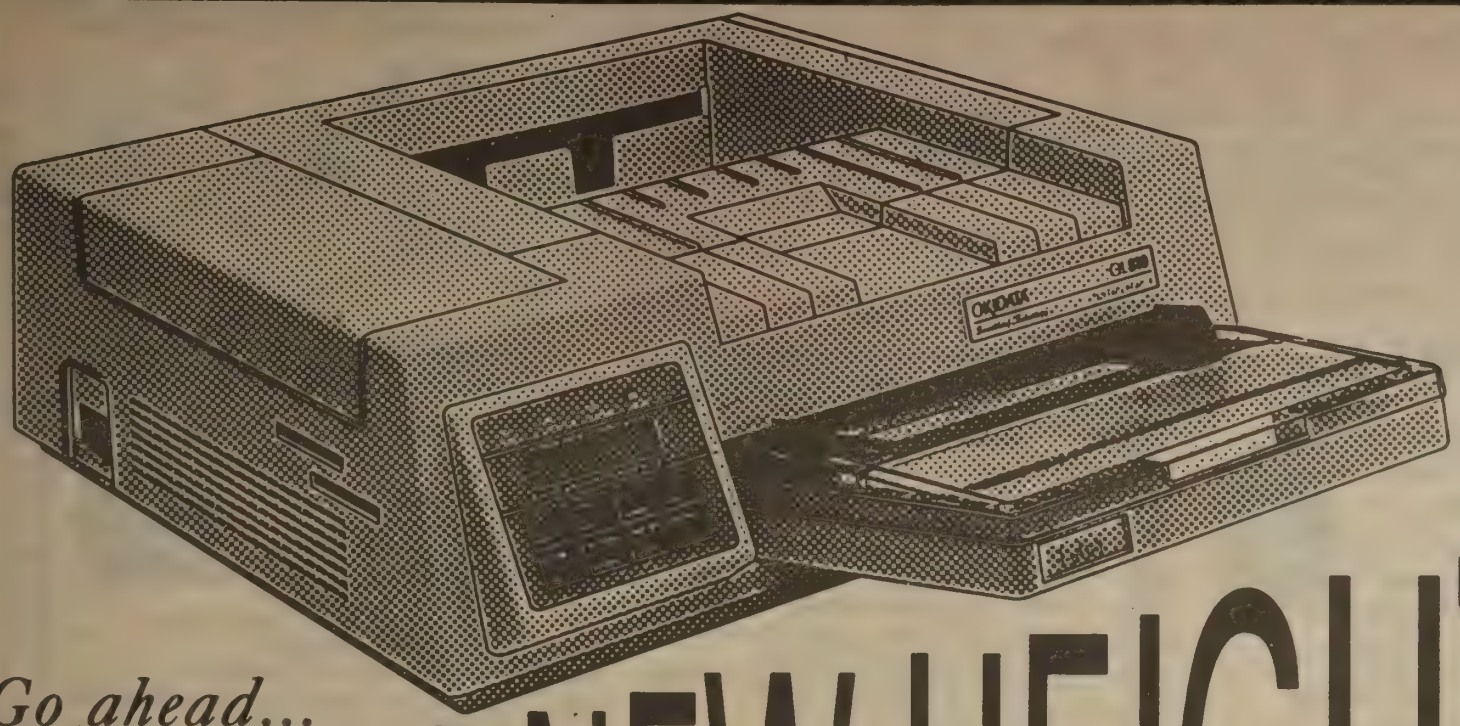
As shipped for this review, the unit comes with two cards installed: the Merriam Webster Dictionary Plus card and Franklin Word Games. The dictionary doubles as a simple thesaurus; it's extensive, but the definitions are rather brief, usually only a short phrase or sentence. However, this is sufficient to adequately define most of the words I tried. The thesaurus function will typically list several other words with the same or similar meaning. Word Games includes a number of children's word games, ranging from the classic Hangman to a Tetris-like "Letris" game.

This technology has potential, but it's up to Franklin to exploit it. Since their ROM format is not an industry standard, they will be, at least initially, the sole publishers of "books" for their reader. Currently the unit only has two electronic books available in addition to those I tested: The Medical Letter, a medical reference, and the Video Companion, a guide to selecting rental videos. Price of the ROM cards varies from $29 to $99. Obviously the more books become available, the better the DBS-1's chance for success.

We'll see if Franklin opens up its "book" publishing business to third-party vendors; this could dramatically increase demand for the DBS-1 by increasing the size of the "electronic book" selection. This might not happen, however, since Franklin's compression scheme is highly proprietary. It only works well on text; large amounts of graphics and the like (for maps, etc.) will not likely be easily storable on one of these cards. This restricts the utility of the product to mostly text applications. However, the potential for restaurant guides, travel guides, and other textual reference material of all kinds is there.

The price of the unit, $199 list, is not quite as low as one might hope; many full-blown electronic organizers can be purchased for that price, though they typically have only one card slot, not two, and they do not come with the dictionary and World Games card.

Personally, I would prefer to be able to



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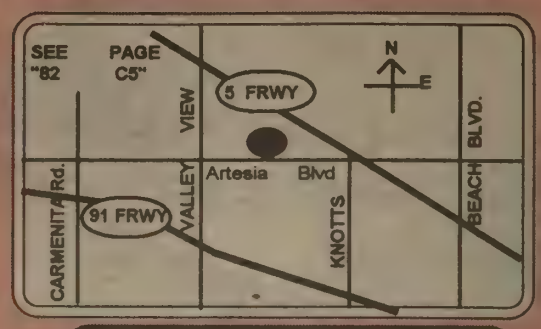

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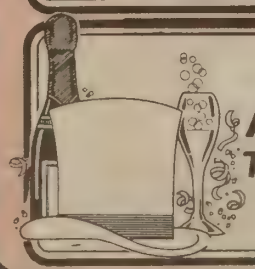
14" VESA Standard,72Hz monitor	+$65



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purchase the DBS-1 with no ROM cards at all, for a lower price, and choose which cards I wanted to start with on my own.

Potential purchasers of this unit will have to choose between a full-blown organizer and something that is limited to only reading electronic books. The small screen also tends to limit its effectiveness. However, the advantage of the DBS-1 is that Franklin's entire operation is devoted to portable information publishing, and they have access to a very good compression algorithm, allowing them to cram more information onto a single card than most other manufacturers. In addition, the DBS-1 is quite small and very portable, with an excellent keyboard.

MORE PCMCIA MODEMS

Magic RAM has announced a line of PCMCIA 2.0 network adapter and I/O cards for palmtop and subnotebook computers. The three cards include an Ethernet, Token Ring, and 3270 Emulation Adapter, allowing you to directly connect your palmtop computer to a network or LAN at full network speed. The Token Ring and Ethernet adapters support NDIS and ODI drivers; ODI drivers are used with Novell and other networks, and NDIS drivers can be used with TCP/IP and Microsoft LAN Manager networks. The 3270 Emulation Adapter can be used to attach your palmtop to a host computer via controllers like the 3174 Establishment Controller, which is typically used in mainframe installations.

P.N.B., a French company, has announced another V.32bis/V.42bis fax modem, including several unique features. It comes with communications software for DOS and Windows which operates in five languages (English, French, German, Italian, and Spanish); it also supports voice digitization, permitting the reception, recording, and transmission of spoken messages and DTMF (a format used by a voice mail system); and it automatically recognizes the type of incoming call (voice, fax, or data). It also includes support for an acoustic coupler, allowing you to use the modem when an RJ11 phone jack is not available. In addition, the ROMs on the card can be modified or updated directly from a palmtop, allowing for upgrades to the modem's system software with very little difficulty. A lower-cost 2400 baud version is also available.

CHIPS AND TECHNOLOGIES

Chips and Technologies has long been well-known for its line of IBM-PC compatible motherboard controller chips; it has been one of the chief suppliers of motherboard components for many of the PC hardware manufacturers for years.

Recently, C&T has begun to move into the palmtop and subnotebook market with the introduction of low-power, single-chip motherboard designs based on its PC/Chip F8680, which combines an 8086-compatible CPU with all the other support electronics typically supplied on a motherboard, all on one chip. A four-stage pipeline and up to 14MHz speed allow 286-level performance (however, 286- or 386-specific software will not run on a machine based around this chip.)

A number of palmtop PC manufacturers are planning on using the C&T design to create low-cost DOS-compatible PC palmtops and subnotebooks. For example, C&T is collaborating with Lexmark International to design and market a class of subnotebook computers called the MiniBook series. They intend to be operational for up to 40 hours on six AA batteries, include two PCMCIA slots, up to 640 x 400 pixel displays, DOS 5.0 in ROM, and performance up to 10MHz.

In another collaborative venture, Chips and Technologies has joined forces with Logitech to create a "Pen Reference Design" which will allow Logitech and other manufacturers to create low-cost pen-based computer systems for under $500 list. This is not an end-user product, but a design that other manufacturers can start with to create their own pen-based machines. This design would allow up to 2MB of system RAM, which would dramatically reduce the price of basic-functionality pen-based computing to well within the consumer price point. The only drawback to the system is that the CPU speed is still rather slow; experience has shown that adequate handwriting recognition really requires very powerful software, which in turn requires very fast hardware. (The Apple Newton, for example, includes an ARM microprocessor which is twice as fast as a Mac IIfx.)

However, the C&T design for the first time brings PC-based pen computing in well under the $1000 consumer price level, which opens the door to a large degree of competition in the portable pen-based computer market. Supported pen-based operating systems include GeoWorks' Pen/GEOS, GRiD's PenRight!, and CIC's PenDOS.

BIG CORPORATIONS GET INTO SMALL COMPUTING

A new company called EO, Inc. has joined forces with some big-name multinationals such as AT&T, Matsushita, and Marubeni to create a product line they call the "personal communicator." The hardware is based on AT&T's Hobbit low-power RISC processor and the SDP16 digital signal processor (used for high-speed modem functionality), GO Corporation's PenPoint pen-based operating system, and PCMCIA 2.0-based technology.

AT&T has long been known for its world-class research facilities (Bell Labs is the equal of any national research lab in the country), but also for failing to deliver low-cost high technology to the general public. However, recently they've begun to try to turn their research prowess into actual products, and this may be one of their first major endeavors.

At this point it is far too early to evaluate AT&T's potential in this market; just being big doesn't mean you're going to make it in the small-computing world. AT&T does have immense brainpower in the form of Bell Labs, as well as admirable financial resources.

Sitka Corporation and EO, Inc. have announced a licensing agreement that will allow Sitka's mobile networking products, PenTOPS and PenCentral, to be bundled with the EO Personal Communicator 440 and 880. PenTOPS and PenCentral support peer-to-peer networking, and will allow the Personal Communicators to connect with DOS-based PCs via serial port or modem connection, allowing sharing of hardware such as disk drives, printers, and the use of network applications such as database servers. PenTOPS supports connections to Novell NetWare and LAN Manager networks as well.■

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A Universal Docking Unit

Smaller Notebook Computers Have Generated A Wave Of External Modular Peripherals, All Of Them Searching For A Way To Connect To Your Computer

BY ED KAHN

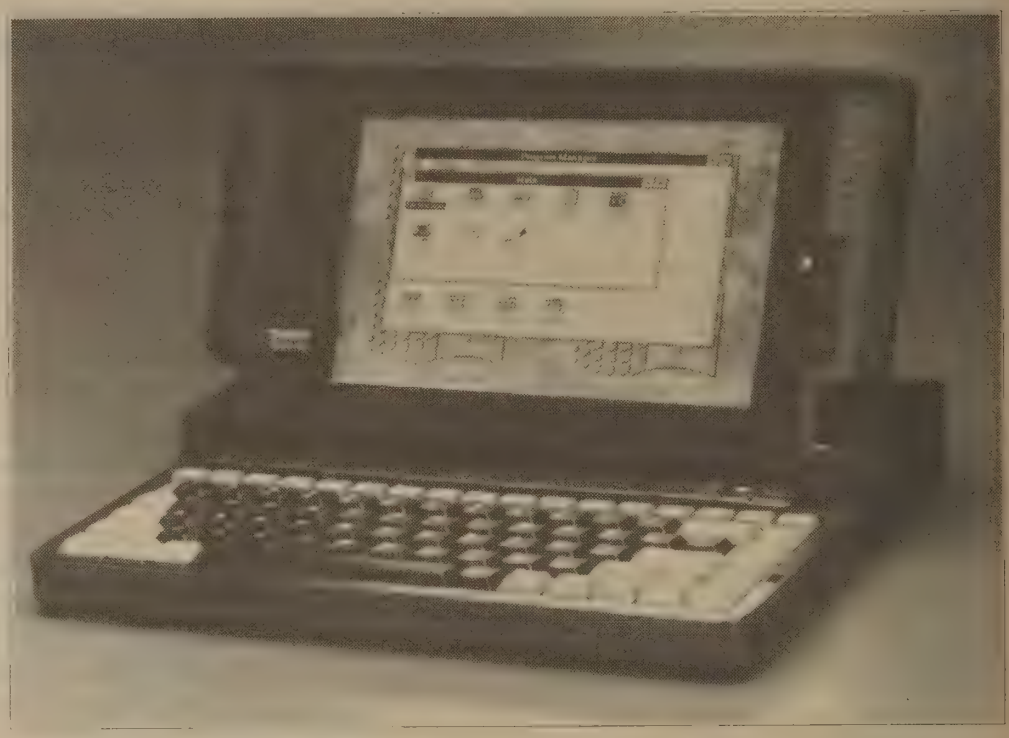
To make computers smaller, features were eliminated. In order to get these features back, modular units for the missing parts were developed. The result has been a wave of modularity: You would purchase a small computer, but then you would start accumulating a variety of devices to replace the features you sacrificed for the small size. So after getting the smallest computer you can find, you add a color monitor and keyboard to bring you back up to the standards you have grown to love on your desktop machine. But you find you are still missing the power that comes with a bunch of floppy drives, tape backups, CD-ROMs, and expansion slots.

For years, notebook computer vendors have offered docking stations to answer these needs. These gadgets are generally expensive, but the only way to get the job done if you need full desktop features as well as a portable machine. A docking station gives you a single unit to plug your notebook computer into, it usually provides disk drives and a full array of ports to connect your serial and parallel devices, an external monitor and keyboard. This gives you a full-scale desktop machine with all of the advantages of portability.

When you need portability, you unplug your notebook computer from the docking station, leaving all of your peripherals in one place. When you return, you plug in again and you are back in business with a full-featured desktop-like computer.

Axonix offers a wide range of docking stations that will work with almost any standard notebook computer and are available in different sizes, depending upon your needs. The smallest units are very basic—simply a housing that holds a two-thirds-length expansion slot so you can use a single card of your choice. Larger units hold an array of cards and drives. A typical mid-range unit has three full-length expansion slots and three 3.5" drive bays. The largest unit holds five full-length cards, two 5.25" devices—either floppy drives, tape drives, or CD-ROMs—and three 3.5" devices.

These units range in price from $322 to $476. Their advantage over the factory models is both price and flexibility. With the Axonix models, you can get just the configuration you want. The heart of the Axonix stations is their ability to hold drives (or anything else that fits into the drive bays) and expansion cards. The disadvantage is that many of these models do not offer ports for attaching keyboards and monitors.



Axonix recently introduced a new, inexpensive product called CableMate, designed specifically to answer this need. Cablemate allows you to install drivers or cards, but does offer ports for attaching all of your peripherals. The advantage of this is that if you detach your portable often, you will not have to reconnect anything except this one bus connector. It's a lot simpler than detaching and reattaching monitor, keyboard, phone lines, printer, and the like.

CableMate comes in two versions. The standard model ($199) accommodates all of the peripherals that you might want to connect to your notebook computer. The CableMate Plus ($229) is the same product, but adds a port that allows you to connect directly into one of Axonix's line of docking stations. With both products, you can achieve exactly the configuration you want and still have your stripped-down portable for on-the-go use.

This line of products is the first I have seen from a third-party source to address this set of needs. One of the reasons we have not seen other products filling this niche is because the products have to be manufactured to the specifications of each make and model of computer that they will serve. In other words, this is not a generic-off-the-shelf product. Axonix has configured the line of docking stations for a wide range of computers including all of the majors and an amazingly large selection of the less common manufacturers. While a number of manufacturers are working directly with the company to make these products available to their customers, I doubt that you will find any of these items in a store. Your best bet is to contact the company directly and let them build a system to your specifications.

I have long felt that portables should be considered modular elements of a total computer system.

CableMate goes a long way toward integrating these modules. More and more products and complete computer packages based on the modular concept are coming to market. Apple's Duo notebook and DuoDock docking module embody just this concept.

RESOURCES:

Axonix Corp.
1214 Wilmington Ave.
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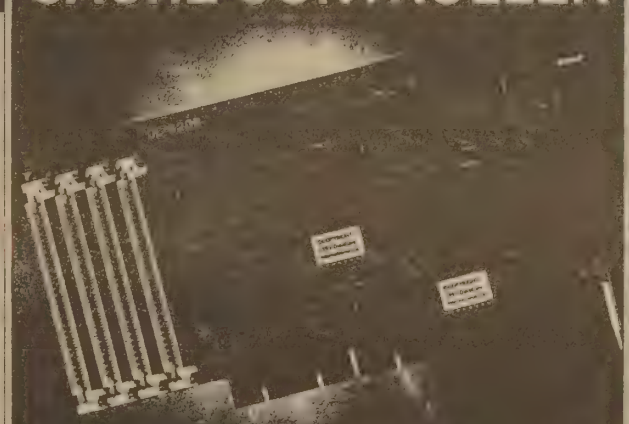

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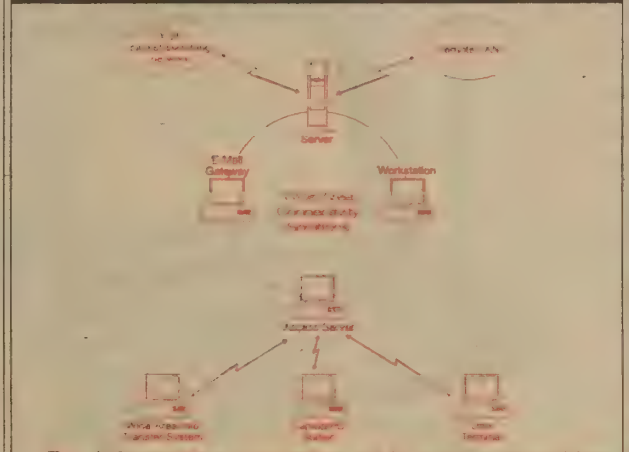

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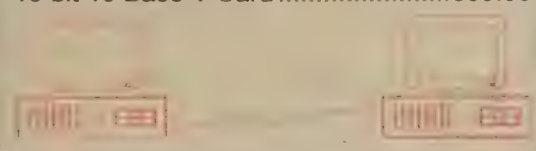

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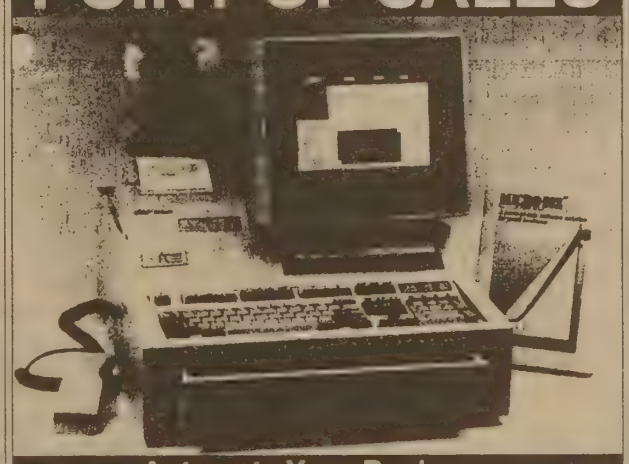

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COMPUTER OF THE MONTH:
TANDY 3800 HD

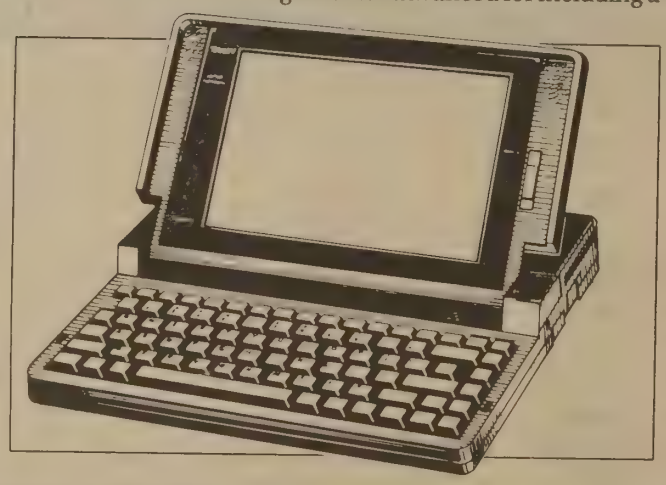
Over the years, I have come to have great respect for the Tandy line of laptop and portable computers. While many people tend to dismiss these machines, I have never run into a dissatisfied owner. For the most part, the machines are well designed, well made, and reasonably priced. If they do need service, you can't beat the national network of dealers found almost everywhere.

Tandy recently came out with the 3800 HD—this is the first computer I have examined that incorporates the revolutionary Cyrix 486 chip. The chip has the power of a 486, but the price of a 386. Running at 20MHz, the 3800 HD includes a 60MB hard drive and carries a list price of under $2000.

This notebook computer weighs about 6 lbs., including the rechargeable battery. It measures 1.7" x 12.2" x 10" and comes with 2MB of memory, expandable to 4MB ($259.95).

The display on the computer measures 9" diagonally. While that is large enough, the actual measurements of 7.75" x 5.75" introduce a ratio that makes it necessary for the individual characters to appear smaller than I like. The backlit screen is sharp, but the letters are simply too small. The resolution is VGA, but unfortunately there is no video port on the unit. This makes it impossible to attach a color monitor. From my point of view, this is a serious limitation since I prefer to rely on the LCD screen only when I am on the road.

Likewise, Tandy has not included a port for an external keyboard. The same arguments I advanced for including a video port speak to this limitation as well. The tradeoff is that you get an extremely powerful computer at a great price and in a compact size. The keyboard that Tandy includes with the 3800 HD is excellent. The layout is exactly as I would have it, with separate keys for PgUp, PgDn, Home, and End. One of the features I always look forward to on a Tandy computer is the ability to configure the Control and CapsLock keys in the layout I want. On this model, you can easily reverse the position of these two keys to get them where you think they should be.



The NiCad battery pack will give you about two hours of use before needing a recharge. This is definitely at the low end of the spectrum, with some of the competition providing battery systems that will last up to eight hours. The battery pack, however, is small enough so you can carry an extra one ($99.95) in your pocket. Recharge time is about four hours if you are concurrently using the computer and about two hours if you simply set the machine aside to recharge.

I am curious to know why the battery life is so short in view of the advanced power conservation features that are built into this computer. A standby mode lets you shut down the machine and keep your place. A display switch lets you turn off the display until you hit a key. A disk key lets you power down the hard drive until it is needed.

A compartment on the back of the machine holds both a parallel and serial port. There is also a compartment for installing a 2400 baud/9600 baud fax modem ($249.95). This leaves the serial port free for installing a mouse. You will definitely want either a mouse or some other pointing device as the machine comes with MS-DOS 5.0 as well as Windows 3.1 installed. Radio Shack was one of the first companies to include a graphical interface with their computers. While it was effective, it is good that they have abandoned their proprietary desktop software in favor of Windows.

This machine has the usual host of options. A range of carrying cases is available and there is room for a math coprocessor, although Tandy does not offer one for sale. A one-year warranty rounds out the package. If you are looking for a well-designed notebook computer that you will use on the road, this is one to consider.

RESOURCES:

Tandy 3800 HD ,$1999
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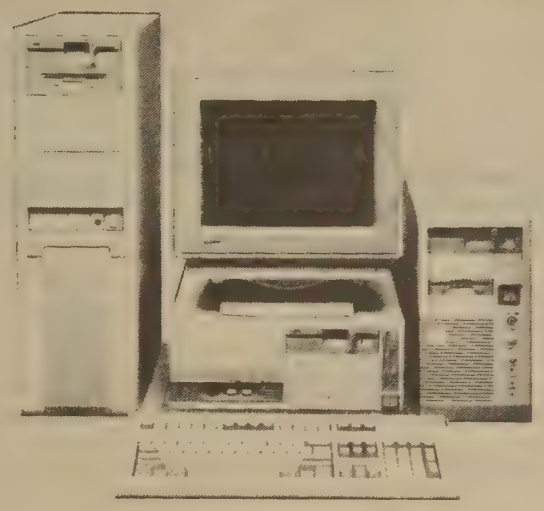

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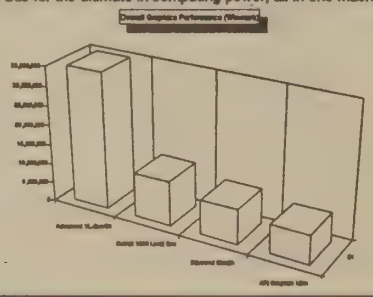

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PCMCIA Moves To The Network

Emerging Standard Offers Unique Advantages

BY YACCO

PC Cards were originally developed for handheld machines like the HP 95LX, and adopted by notebook machines like the Toshiba T3300SL. They've evolved with the guidance of standards groups such as JEIDA (Japan Electronic Industry Development Association), JEDEC (Japan Electronic Devices Engineering Council), and PCMCIA. Now these standards have consolidated, and in consolidating, created a force that is going to change the PC.

Industry pundits are predicting that by 1995 there will be some six million portables with PCMCIA slots, and that slightly over a million LAN adapters will be sold that year. However, these estimates do not take into account the number of desktop solutions that will be available for PCMCIA.

This year's COMDEX was loaded with notebooks and handhelds that accept PC Cards, as well as a large showing of the cards themselves. It's the availability of cards that will stimulate more system development. I think we'll see a number of PCs with PCMCIA slots at next year's COMDEX. That will spur even more PC Card development, and within two years, PC vendors will be able to begin offering desktop systems in which the PCMCIA bus is the primary or only bus.

There are overwhelming reasons for PC vendors to do this, and they're not just the advantages that PCMCIA offers to the user.

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ADVANTAGES OF PCMCIA

The immediate advantages of PCMCIA to the user are obvious: simple installation, hot swapped repairs, and even hot swapping of functionality. It's unnecessary to open your computer to add your network adapter—merely plug in a PC Card. If a LAN interface goes bad, just pull it, and plug in another. That's hot swapping.

It works for ordinary operations too. You'll be able to plug in a modem PC Card, download a file, swap the modem for a flash-memory PC Card, and store the data before plugging in something else. (Of course, desktop machines could easily provide a score or more tiny card slots, but as long as vendors like Apple have a stranglehold on users of their proprietary systems, they will probably always use a limited bus to push users into their top-of-the-line machines. At least, PCMCIA will make it harder for them to do it.)

There are also longer-term advantages that will emerge when systems are designed around the PCMCIA bus. For example, PC Cards have low power requirements (National Semiconductor's LAN adapters require just 1.2 watts maximum, 0.8 watts typical). Systems using them will require smaller power supplies. Again, this will make it hard for certain vendors to inhibit expansion by underpowering their systems to the point that third-party manufacturers have a problem designing enhancements.

Furthermore, a PCMCIA system with its smaller power supply, hard drive, CD-ROM, and floppy should have a footprint about the size of a shoe box. That's not only great for LAN workstations, it's great for any cost-conscious consumer too. Manufacturing efficiencies have brought today's PCs to the point where they're practically priced by the pound. So smaller PCMCIA systems will further reduce hardware prices once demand kicks into play.

Cards too. Barry George, D-Link's vice president of marketing, says his PCMCIA adapter "will have a projected cost lower than any of my current internal adapters." Finally, PCMCIA can provide the same bus for the PC that it provides for other architectures such as Mac, UNIX, and PDA. This interoperability will further increase the market for PC Cards and continue to drive prices lower.

All of that's great for buyers, but not the main reason why vendors are going to climb aboard in droves. The main reason you'll be able to select PCMCIA-bus PCs from many vendors is that mass retailers are going to love them, and pull them into their huge marketing channel.

Mass merchandising isn't about knowledgeable sales staff. It's about products that sell themselves. Retailers want impulse items that sell in blister packs, not gadgets that have to be installed by technicians. That's practically the very definition of the PCMCIA bus. So vendors that offer PCMCIA machines will sell more—a goal of every major vendor. The last year has shown that companies—e.g. Compaq and Apple—that lower prices also increase sales and, in the case of Apple, make record profits. Doldrums-bound IBM has reorganized to follow suit. PCMCIA will sell more, and with lower production costs, make more money at lower prices.

It's unnecessary to open your computer to add your network adapter—merely plug in a PC Card.

PCMCIA ON THE DESKTOP

I could be wrong, but all this seems inevitable. George seems to agree. "The PCMCIA market is more than a portable market," he says. "It's an efficient and time-saving standard for corporations to install and maintain desktop machines."

The technology is ready. Socket Services is the BIOS-level interface that provides access to the host computer's PC Card slots (sockets). Socket Services identifies the number of available sockets, detects the insertion or removal of cards (allowing hot swaps), and interfaces with Card Services. Card Services provides the interface that manages software;

it allocates and releases system resources, such as memory and interrupts, for PC Cards as their insertion and removal are detected by Socket Services. Card Services also provides the interface necessary to load hardware drivers.

A PCMCIA system with its smaller power supply, hard drive, CD-ROM, and floppy should have a footprint about the size of a shoe box.

Intel has also provided some silicon glue to ease the implementation of PCMCIA on PC motherboards. Its ExCA (Exchangeable Card Architecture) has been adopted by twenty-nine mobile-computer vendors and all major BIOS vendors. ExCA allows the vendor of Intel-architecture systems to implement a standard socket. Chips based on the open standard developed by Inte are available from both Intel (the 82365SL ExCA chip) and Cirrus. "By Q1 next year the standard socket issue should be resolved," says Kirby Dyess, mobile business unit manager for Intel's PCED Business Communications Division.

Frankly, I think that the only thing that may delay this evolution from reaching the desktop for as long as two years is Catch-22. Retailers must, regrettably, await the availability of many PC Card add-on choices before PCMCIA computers will sell in the volume required by their channel. So, the process will involve a couple of stages.

First, the choices available at this year's COMDEX will promote development of PCMCIA add-on subsystems for desktop computers (similar to the one in the third-party PowerBook docking station I mentioned last month). They will sit on the desktop, and plug into an ISA adapter or parallel port. This will give more vendors the incentive to hurdle the barrier of PCMCIA's technical demands.

In stage two, PCMCIA desktop machines will begin to appear, probably from the makers of small network workstations who will view it as an opportunity to add strength without bulking up. Eventually, the majority of desktop machines could make the transition.

Take this logic a small step further, and PCMCIA 2.01, Sockets Services, and Card Services spell the beginning of the end for the ISA bus. But PCMCIA has potential for more than replacing ISA. Under consideration are strategies for a 32-bit bus with bus mastering. It's potentially everything that EISA or MicroChannel offers, but in a package that will meet the needs of the smallest workstation.

Come to think of it, an array of PCMCIA card slots could just as easily define a sophisticated server. ■

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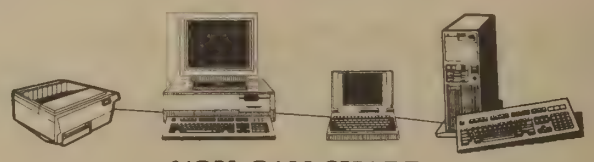

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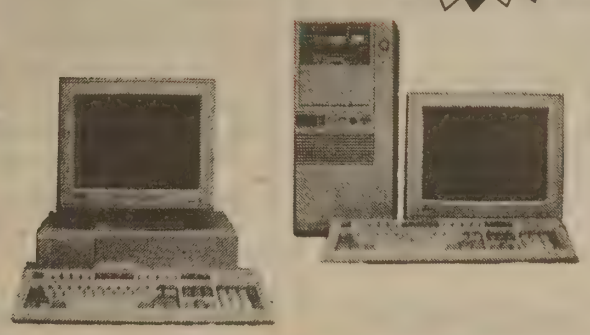

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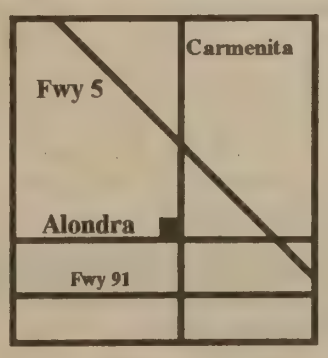

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MICROTIMES 100

Big Winners Of 1992: William H. Gates III, (above), Chairman and CEO of Microsoft; and Andrew S. Grove, President and CEO of Intel

PHOTO COURTESY INTEL CORPORATION

The oft-repeated cliché about the industry in 1992 was that there were exactly two big winners: Microsoft and Intel. Like most clichés, this one's a bit of an oversimplification—Apple's billion dollars' worth of PowerBook sales are hard to ignore, for example—but few companies benefited more from the widespread adoption of Windows.

On most fronts, 1992 was a transitional year in the microcomputer company's evolution. While still popular, MS-DOS and the Mac operating system are in their twilight years, and any number of companies and consortia are scrambling to establish and exploit new OS standards to take advantage of ever-more-powerful hardware.

If history is any indication, the lion's share of that hardware will have Intel Inside. 1992 saw a host of vendors coming to terms with this reality: Sun, while insisting on the superiority of its RISC-based SPARC architecture, made sure it had an Intel version of its Solaris operating system. NeXT, historically a Motorola house for its own hardware, decided that the path to corporate acceptance lay with Intel, and announced that it was porting its object-oriented NeXTstep environment to the Intel architecture. IBM may have entered into an agreement with Apple to develop a new OS for the RS6000 chip, but for now, OS/2 runs on Intel.

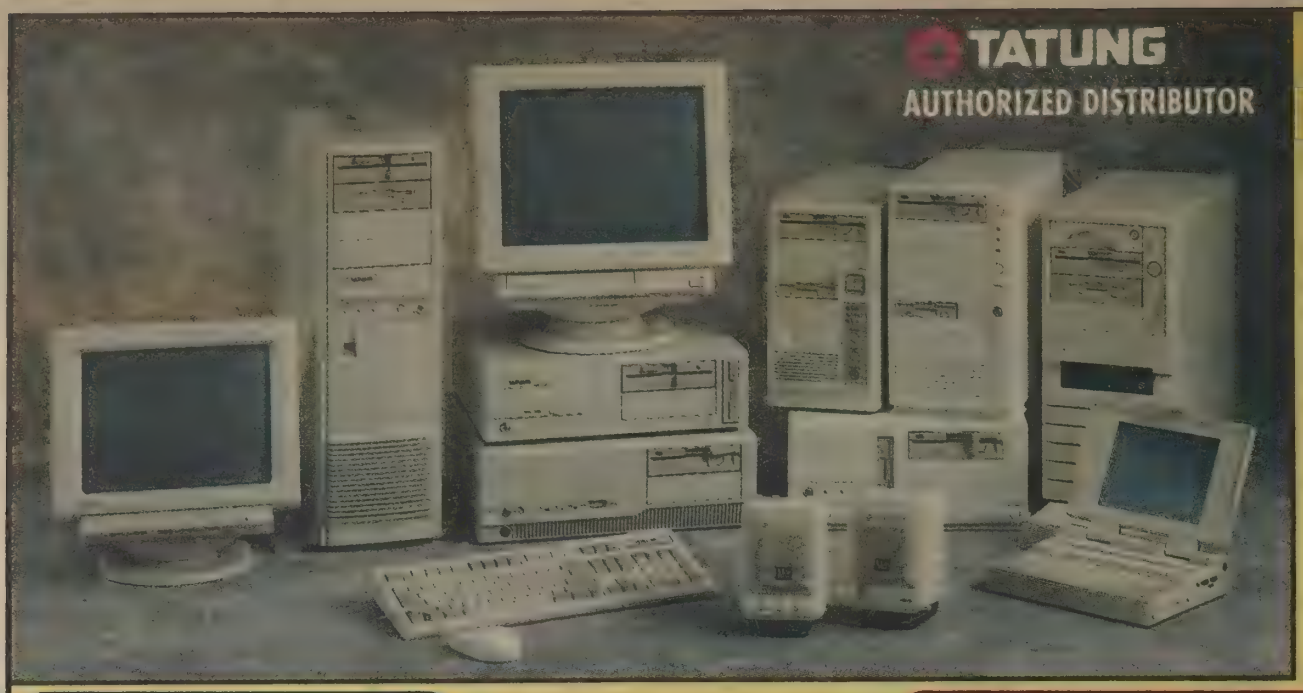
Again, if history is any indication, what will probably be running on that hardware for the foreseeable future is some variant of Windows. Windows NT, due in early 1993, delivers UNIX-like power and has a clear compatibility/upgrade path from current DOS and Windows applications. But there's going to be a version of Windows for everybody—networked for workgroups, scaled down for pocket-sized wireless gadgets, pen-based for handwriting-input machines.

Not that Intel and Microsoft have worry-free lives. Intel has to deal with a variety of pesky competitors that make Intel-compatible chips and fill the inevitable holes in Intel's product line—486 chips that fit in a 386 socket, CPUs with low power requirements, etc. Intel spends a lot of time and money litigating with these competitors, picking a new, legally protectable name ("Pentium") for its next architecture, and generally trying to maintain its turf while innovating.

Microsoft, which is now bigger than General Motors, would appear to be in a more unassailable position—whereas software vendors used to whine that it was impossible to compete with Microsoft in the operating system arena, they're now complaining about similar difficulty with applications. One looming cloud on the horizon is the FTC's ongoing investigation of Microsoft, which some have speculated may result in a forced separation of its OS and application divisions. Borland's Philippe Kahn, whose company was dealt a severe blow recently when Microsoft went into the database business, has been heard to remark that gee, phone service got better and cheaper after AT&T was broken up, and...

Even if this never transpires, and Microsoft's competitors are

A YEAR OF TRANSITION



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- Desk Top case w/200 w UL P/S

$1,135

486DX 33(50) Mhz Local Bus

- 486DX 33(50) Mhz M/B w/CPU
- 256 KB Cache, 2S, 1P, 1G
- 4 MB memory (up to 32 MB)
- Local Bus ET-4000 Hi-color VGA Card w/1 MB
- Local Bus IDE/FDD controller
- Teac 1.2 MB & 1.44 MB FDD
- 120 MB Hard Disk drive
- SVGA color monitor w/.28 DP
- Focus 2001 101 keys keyboard
- Mini Tower case w/200 w UL P/S

33 Mhz.....$1,799
50 Mhz.....$1,999

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Okey Dokey Audio card
11 voice Yamaha FM Synthesizer
Ad-lib/Sound Blaster compatible
8 bit arcade quality sound
Power amplifier w/4 w @ 4 Ohm
MIDI interface on board
Software included:
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Commander Keen, NKey
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486DX 33(50) Mhz Local Bus

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- Teac 1.2MB & 1.44 MB FDD
- 120MB Hard Disk drive
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- Focus 2001 101 keys keyboard
- Mid Tower case w/250 w UL P/S

33 Mhz.....$ 2,359
50 Mhz.....$ 2,509

486DX 50 Mhz EISA

- 486DX 50 Mhz EISA M/B w/CPU
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- 4 MB memory (up to 32 MB)
- DTC EISA IDE/FDD controller
- Teac 1.2 MB & 1.44 MB FDD
- Trident SVGA card w/1 MB
- 120 MB Hard Disk drive
- SVGA color monitor w/.28 DP
- Focus 2001 101 keys keyboard
- Mid Tower case w/200 w UL P/S

$ 2,279

33 Mhz EISA / Local Bus
$ 2,059

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■ BASIC CONFIGURATION:

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Window 3.1 w/Mouse
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Novell certified for File Server/Workstation
One year ON-SITE Service Warranty

486DX 33Mhz EISA

486DX 33Mhz EISA M/B w/ CPU
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120 MB Hard Disk drive
Tower Case w/220 Watts P/S
$ 2,559

486DX 33Mhz

486DX 33Mhz M/B w/ CPU
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120 MB Hard Disk drive
Tower Case w/220 Watts P/S
$ 1,839

486DX 33Mhz

486DX 33Mhz M/B w/ CPU
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120 MB Hard Disk drive
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$ 1,779

386SX 25Mhz

386SX 25Mhz M/B w/ CPU
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386DXL/33 4 MB RAM, 80 MB HDD
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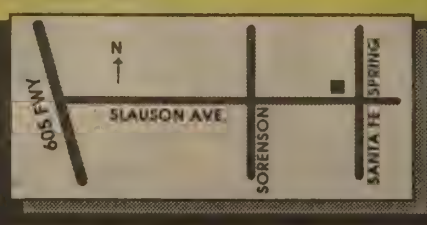


disappointed, a formidable array of companies from Novell to Sun to onetime ally IBM are scrambling to get technology and alliances in place to help them seize markets from Microsoft.

We'll see what happens. But in the meantime, a host of small companies, often startups, are finding lucrative niches unnoticed (for now, anyway) by the titans. A recent panel at the Technologic Partners PC Outlook conference was devoted to the theme of "Whatever happened to the software business?" subtitled "Can anybody besides Microsoft make money from Windows?" The answer, apparently, was a guarded "maybe," but T/Maker CEO Heidi Roizen offered an interesting insight.

For years, she said, T/Maker has been publishing an affordable, high-quality word processor for Macintosh, WriteNow. In 1992, they shipped its latest improved version. In the same year, they debuted a package called FaxMania, a variation on the ClickArt formula that lets faxmodem users send snazzy cover sheets with their faxes.

FaxMania, she says, is outselling WriteNow. By a considerable margin. Competing against MS Word is at best a struggle. Intellectual property, digital content, is the wave of the future.

Certainly with the long-awaited popularity of multimedia, content will be a critical element of tomorrow's computer industry. So will encryption. So will wireless communications. So will groupware.

A large number of people on this year's list are experiencing early success with these emerging technologies. Consider the list, and the year it represents, a preview of coming attractions.

Sheldon Adelson

Chairman and CEO

Interface Group

As computer-industry trade shows continue to proliferate at a stunning rate, Adelson's COMDEX, which engulfs Las Vegas each fall and has a major presence in other cities the rest of the year, just keeps getting bigger. Whether it's product announcements, demos, or general partying and schmoozing, COMDEX is *the* annual gathering place for the industry and shows no sign of losing momentum.

Alan Ashton

President

Bruce Bastian

Chairman

WordPerfect

A few months ago when we published our 100th issue and asked our writers to predict the state of the industry at the time of Issue #200, one of them suggested that WordPerfect would be to the '90s what WordStar had been to the '80s—i.e. a company that had blown its position of market domination by failing to respond quickly to changing conditions. It was a fairly oft-expressed sentiment, particularly as WordPerfect was somewhat late in shipping a Windows product.

However, in the course of 1992 Ashton and Bastian (who have nearly exclusively owned the privately held company since they started it in 1978) have made it quite clear that they have no intention of heading down that infelicitous path. Longtime executive vice president Pete Peterson departed suddenly in March, and the two founders began a course of opening up the formerly insular company with, among other things, an alliance with Novell and the incorporation of Adobe's PostScript into its products. There are even rumors that the company may go public.

With its flagship product running on virtually every significant hardware platform, a strong presence in the growing workgroup market, and a customer support department that's the envy of every other company in the business, WordPerfect seems well positioned to parlay its existing advantages and new relationships into further success.

Carol Bartz

President, CEO, and Chairman

Autodesk

Recruited in April to succeed Autodesk's retiring CEO Alvar Green, former Sun vice president Bartz has effectively eliminated the slow decline into complacency that prompted founder John Walker to write the now-famous Information Letter #14. In her brief tenure so far, she's brought in strong management and positioned the company to expand its leadership in the increasingly competitive global CAD marketplace, notably with the formation of a new Mechanical division with the acquisition of Micro Engineering Solutions.

Steve Bass

Founder and President

Pasadena IBM PC Users Group

Reader Tom Lenzo recommended Bass to our attention for founding and leading this group so effectively. On seeking further info, we discovered that the now-huge user group, with 2,000 members and a wide variety of SIGs, arose from a classic instance of making lemonade when handed lemons.

In 1983, says Bass, he bought an IBM PC from a Large National Chain, and, when he asked for support, was told "don't use it in the shower." The next day, he founded the Pasadena group. In the late '80s, he also cofounded the Association of Personal Computer User Groups (APCUG), a nationwide organization serving user groups. .

But wait, there's more. He's also a contributing editor with *PC World*, writing the Home Office column and editing the User Group Tips feature. He's also a syndicated newspaper columnist and the originator of what he terms "the allegedly humorous computer advice column, Dear Dr. DOS."

Daniel Ben-Horin

Director

CompuMentor

Ben-Horin founded CompuMentor to bring together the vast expertise of people working in the Bay Area computer industry with struggling nonprofit organizations seeking help as they entered the digital age. Each year, CompuMentor dispatches hundreds of volunteers to help set up mailing lists, install networks, offer advice on software purchases, and generally reduce technophobia for a wide variety of nonprofits. In addition to growing into a significant organization itself, CompuMentor has served as the inspiration for several organizations across the country that seek to perform similar service in their communities.

Eric Benhamou

President and CEO

3Com

Benhamou has led 3Com through a traumatic turnaround, giving up its computer hardware and networking software operations to focus exclusively on networking hardware. His efforts have paid off in surging sales and profits for the company, as well as the development of what amounts to one-stop shopping for companies in need of complex special-purpose networking products.

Jim Bidzos

President

RSA Data Security

Until recently, encryption was a highly specialized field of little interest to the mainstream computer community. But with the advent of new technologies, from wireless (and thereby easy-to-intercept) communications to collaborative computing, it has become increasingly vital to ensure that messages originate with their stated authors and go only to intended recipients, and the formerly esoteric field has now assumed crucial importance.

Founded by the three MIT professors who devised its proprietary encryption algorithm in 1977, RSA has grown under Bidzos's direction to the world leader in encryption technology, its products enjoying the status of de facto standards worldwide.

Despite some governmental opposition (rumor has it that the super-secret National Security Agency doesn't want the general public to have encryption it might not be able to break), RSA technology has already been licensed for current and future products by such diverse vendors as Lotus, Microsoft, Sun, Novell, DEC, Motorola, Northern Telecom, and Apple.

As data security assumes vital importance in the present and future computing needs of business and consumers, RSA is positioned as the leading player in this burgeoning market.

The Folks At BMUG

Going beyond its historical strength as the premier resource for Macintosh users, BMUG now offers service and support for Windows, UNIX, and other environments as well. It also offers services from software to T-shirts, and supports interest groups on subjects ranging from civil liberties to programming languages. It's a unique technical, cultural, and social asset, and many of us in the computer world would be lost without it.

Sheldon Breiner

President and Cofounder

Quorum

While RISC-based workstations are becoming increasingly attractive to current Macintosh users for their speed and power, the small selection and high prices of UNIX applications have been a powerful deterrent to the acceptance of such hardware in mainstream markets. At the same time, users with a heavy investment in Macintosh applications (and training) are generally reluctant to abandon that investment in order to get more powerful hardware.

Quorum offers an innovative twofold solution—Quorum Latitude, a tool that allows developers to quickly port their Mac applications to UNIX environments and give them the workstation's native GUI, and Quorum Equal, which lets users run unmodified Mac applications on Sun, Iris, and other workstations. Despite a few legal salvos from Apple in early 1992, it appears that Quorum is on solid and non-infringing ground with the product, and providing a clear Mac-to-workstation migration path that's a viable alternative to Microsoft.

"We are bringing the empowering wealth of personal computing to the raw power or RISC," said Breiner at the time of Quorum's rollout at 1992's Macworld Expo. At a time when Microsoft is exerting enormous pressure on Mac developers to port to Windows and NT, "Quorum's technology lowers the technical and economic barriers preventing Macintosh software developers from entering the emerging market for RISC-based computers."

Gordon Campbell

Chairman, President, and CEO

Chips and Technologies

With a longtime strategy of developing and marketing value-added, Intel-compatible chipsets, C&T has had its ups and downs in recent years. It appears to be back on track and positioned to take advantage of emerging growth markets, notably the palmtop and pen-based computer, with a full line of massively integrated silicon technology under development. The recently announced 8680 PC/CHIP, for instance, is expected to be a real boon to palmtop hardware vendors and customers, integrating in a single, low-cost chip all the features of a full PC except system memory.

Jim Cannavino

Vice President, IBM; and General Manager, IBM Personal Systems

IBM

Instrumental in both IBM's alliance with Apple and the severing of its relationship with Microsoft, resulting in the clear differentiation of OS/2 as an operating environment, Cannavino has been a central figure in IBM's recent redefinition of itself from complacent giant to an entrepreneurial, nimble, and forward-looking competitor.

One of his most visible accomplishments in the past year was the formation of IBM's Personal Computer Company, which announced a full range of technically innovative and competitively priced products in the fall.

Doug Carlston

Chairman and CEO

Brøderbund

"If you build your products properly, you can get products that last a long time on the market," says Carlston with fairly characteristic understatement. The perpetual hit Print Shop not only lives (in updated form), it's the foundation of an entire product line. Ditto the ubiquitous (if elusive) Carmen Sandiego, perhaps the only computer game character with her own TV show, whose educational adventures will shortly take her to outer space.

Reflecting the ongoing Brøderbund commitment to creating technically excellent and appealing products, the company inaugurated its first line of CD-only games, the Living Books series. The first entry, "Just Grandma and Me," is on its way to classic status.

After going public at the end of 1991, Brøderbund has continued to grow and prosper, and with the current boom in home computing, it is likely to continue along the same path.

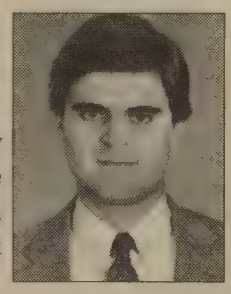
Denise Caruso

Editor

Digital Media

As digital technology reaches into an ever-greater range of human activities, keeping track of the latest developments, from intellectual property law to compression standards, becomes at once overwhelming and vital. For insightful analysis of the current and future state of these matters, and what it means for vendors and consumers alike, Caruso's newsletter provides a state-of-the-art (albeit print-format) resource.

Steve Case



President

America Online

Events of 1992 proved the validity of Case's vision—make online services fun, easy to use, and affordable, and people will flock to them. After its successful public stock offering in March, the company continued to report satisfying increases in revenue while continually enhancing the quality and variety of its product, from services like an Internet mail gateway to online gathering places cocreated with vendors like Microsoft and the *Chicago Tribune*. At year's end, AOL announced another emerging market—an agreement to license its technology to Apple for the latter's future online services. The agreement is expected to be followed by similar arrangements with other vendors.

Barbara Cass

Executive Director

Software Entrepreneurs Forum

Every year this Palo Alto organization adds more SIGs and resources, designed to help its membership of fledgling and established software developers and consultants succeed in a complex and rapidly changing marketplace. Cass and her small staff have dealt with the daily challenges of a growing and diverse association and made it all run smoothly and effectively.

Ed Catmull

President

Pixar

Defining the changing mission of Pixar, founded in 1979 as the Computer Division of Lucasfilm, Catmull says, "Our goal was to make images so realistic that they could be used in live-action motion pictures. Now, we make the tools and systems that will let thousands of people create photorealistic pictures of whatever they choose to design."

Pixar's RenderMan technology is the centerpiece of its spectacular graphics capabilities, and it's becoming more widely available on an increasing number of hardware platforms, from UNIX workstations to Macintosh, with the shipment of MacRenderman in 1992.

Meanwhile, on another front, Pixar's animation technology achieved new milestones, notably the combination of Pixar-generated images with the traditional animation of *Beauty and the Beast*. The evolving Disney/Pixar relationship promises great things for animated films in the future.

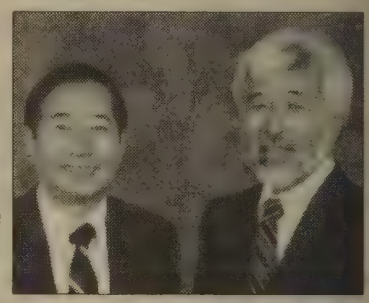
Winston Chen

Chairman

Ko Nishimura

President and CEO

Solectron



With a corporate culture that emphasizes and rewards a sense of individual employee responsibility for the quality of the product, and a low defect rate that's the envy of the industry, Baldrige Award winner Solectron stands as sterling proof that US high-tech manufacturing isn't quite as dead as it's reputed to be. The company, which manufactures components for such clients as Sun, Apple, and Hewlett-Packard, has exported its manufacturing expertise to plants in Europe and Asia, and recently opened an office in Japan to cultivate relationships with Japanese customers and suppliers.

Jim Clark

Chairman

Ed McCracken

President and CEO

Silicon Graphics

The unchallenged leaders in graphics workstations continued to deliver high-performance hardware, notably the awesome Reality Engine, shipped in 1992. Meanwhile, they took further steps to make their Iris hardware an attractive upgrade path to Mac and PC users by dropping prices, increasing performance, and entering into strategic agreements with vendors like Quorum and Insignia Solutions to let PC and Mac users run their existing software on SGI hardware, while taking advantage of

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Serial Mouse

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ATI Graphic Pro (2 mb)	$599
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Diamond Stealth Super VGA Card (1 MB)	$210
MicroSolution Tape Backup 80 MB (External - Plug into Parallel Port)	$425

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SVGA Card (512 KB)
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the Iris's superior graphics and multimedia capabilities.

Scott Cook

President and CEO

Intuit

Intuit's mission of automating home and small business financial transactions was right on target for one of the industry's major growth areas. While its check-handling Quicken product remains a runaway bestseller and enjoys new popularity with the increased acceptance of home banking service, the company innovates on other fronts, with programs for incorporating credit card transactions into Quicken files, handling small-business payroll needs, and creating invoices for professional and service-based businesses.

William Davidow

General Partner

Mohr Davidow Ventures

Intel veteran and longtime venture capitalist Davidow is one of the industry's most astute observers. His 1992 book *The Virtual Corporation* (co-authored with Michael Malone) provides shrewd common-sense analysis of changing markets and business climates worldwide, and the cultural and organizational changes facing US business in general and the high-tech industry in particular if they wish to remain competitive in a world of smart workforces and just-in-time manufacturing.

Jan Davidson

President

Davidson & Associates

Davidson continued to delight children and teachers and provide a tough act to follow for the educational software community with dynamic, effective programs, from Math Blaster to the new, critically acclaimed English Express multimedia-based ESL package.

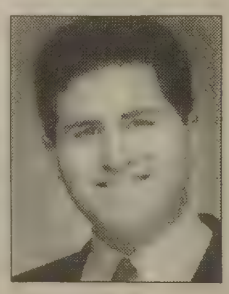
Paul Dean

Cofounder and CEO

Pyramid Data Inc.

Another of this year's up-and-coming entrepreneurs positioned to serve emerging markets is Dean, whose inspiration is an integrated product suite of office automation/groupware applications called PowerOffice! While Dean and his small staff (and outside consultants, one of whom has created a specialized real estate module) work on expanding the product line, they're achieving early success with the first of the PowerOffice! applications, PowerLeads!, a full-featured , Windows-based contact management program.

Michael Dell



Chairman and CEO

Dell Computer

With increasing presence in the retail and VAR channel, Dell has come a long way from its roots as an upstart mail-order business in its founder's dorm room. But, while facing challenges from the newly price-competitive Compaq as well as a plethora of mail-order vendors, Dell has managed to keep his company successful in a changing market, building new alliances and support channels while continually reducing operating costs.

James Dionne

President and General Manager

Commodore

Historically, Commodore has always seemed blessed with a great machine (in the Amiga) and devoted users—and cursed with a nearly frightening inability to capitalize on these assets. For the past few years, the Amiga has languished to the point where many devotees reluctantly abandoned the platform and the company's marketing seemed most skillful at creating new feet in which to shoot itself.

However, the release of the long-awaited Amiga 4000 may change all that. It delivers excellent multitasking and multimedia capabilities with a great price/performance ratio, and, as the profit margins erode in the PC clone marketplace, Dionne hopes to induce more dealers to offer his product line. It's too soon to tell how well the new machine and strategy will pay off, but Amiga watchers are generally more upbeat than they've been since the advent of the Video Toaster.

Brian Dougherty

Chairman and CEO

GeoWorks

Starting with software that gave Commodore 64s and Apple IIs GUI capabilities their creators never intended, and continuing through the current success of GeoWorks, which lets even an XT do windows, Dougherty's exhibited a talent for making small better.

Which, of course, makes it a natural that GeoWorks is making major inroads into what it's calling Consumer Computing Devices. And not surprising that when Tandy and Casio formed a joint venture to develop these devices, they decided on a pen-based operating system from GeoWorks.

Eric Drexler

Research Fellow

Institute of Molecular Manufacturing

Author of *Engines of Creation* and, most recently, the textbook-level *Nanosystems*, Drexler has worked since his undergraduate days to increase understanding of emerging possibilities in nanotechnology, the science of manipulating matter at the molecular level. While most currently envisioned applications may still be decades away, the technology offers seemingly limitless possibilities for good and ill, from tiny supercomputers to biological warfare, and Drexler is a leading force for promoting understanding of the technology for its wise and beneficial use.

John C. Dvorak

Columnist

For someone who's apparently spent much of the year being abducted by aliens and observing bizarre events in the parallel-universe counterpart of Microsoft, Dvorak has managed to continue his prodigious output of information and opinion and delight his fans with ubiquitous columns, syndicated radio shows, and an ever-growing series of Dvorak's Guide books.

Esther Dyson

President

EdVenture Holdings

Dyson's insight is one of high-tech's greatest assets. Involved in the computer industry at a multiplicity of levels, she's the editor and publisher of the highly regarded *Release 1.0* and *RelEast* newsletters, which offer intelligent and hype-free analysis of trends and opportunities in the technology industry, in the US and in the emerging former-Soviet-bloc countries. Her organization produces an annual conference in Prague that's centered around the nascent technology in Eastern Europe.

Dyson is also a limited partner in the Mayfield Software Fund, part of one of the most well established venture capital firms in the business, and serves on several technological advisory boards.

Larry Ellison

President and CEO

Oracle

Borland and Microsoft may be preparing for a major database slugfest on the PC, but they're both talking about how well their software works with Oracle.

Founder Ellison has done a spectacular job of keeping the company on a constant path of beating its own best figures. At the same time, after the first-ever losses and ensuing management shakeup of 1990, he's made some necessary changes in the company's culture, reducing its dependence on its hard-driving direct sales force and moving the product into the dealer and VAR channel.

Meanwhile, his policy of porting the software to every significant operating environment from mainframe to Macintosh—continues to pay off, with, for example, the only 32-bit relational database software that runs under OS/2.

Doug Engelbart

Director

Bootstrap Institute

"Collaborative computing" may be the emerging buzzword du jour, but most of what the industry's only beginning to grapple with, Doug Engelbart saw quite clearly decades ago. From 1959 to 1977 he directed SRI's Augmentation Research Center and developed the NLS system, which incorporated such Engelbart brainchildren as the mouse, display editing, windows, hypermedia, groupware, and shared-screen teleconferencing.

But after years of coming to terms with small bits and pieces of Engelbart's vision, the computer industry seems more ready to deal with its broader applications—at 1992's Groupware Conference, Engelbart got a rousing ovation when he announced that if people still weren't ready to embrace his ideas, well, he was ready to keep talking about them for another 20 years if necessary.

Engelbart's current work at Bootstrap (presently housed at Logitech, where they've done rather well in the mouse business) involves building a consor-

continued on page 59

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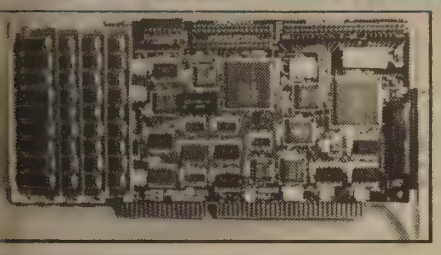

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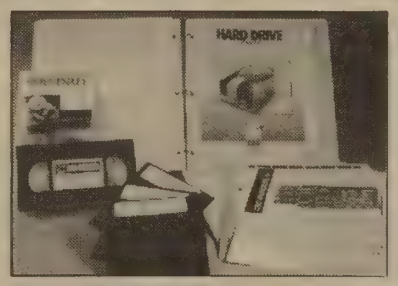

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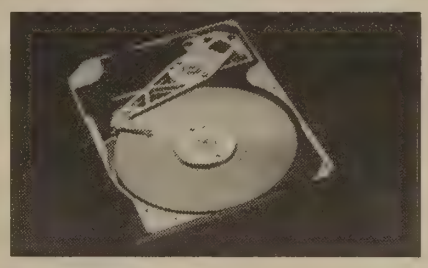

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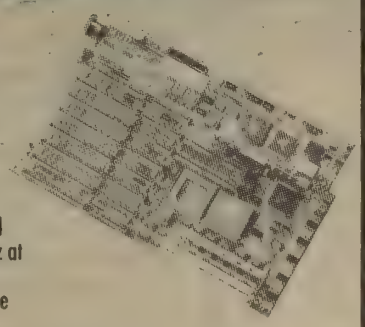

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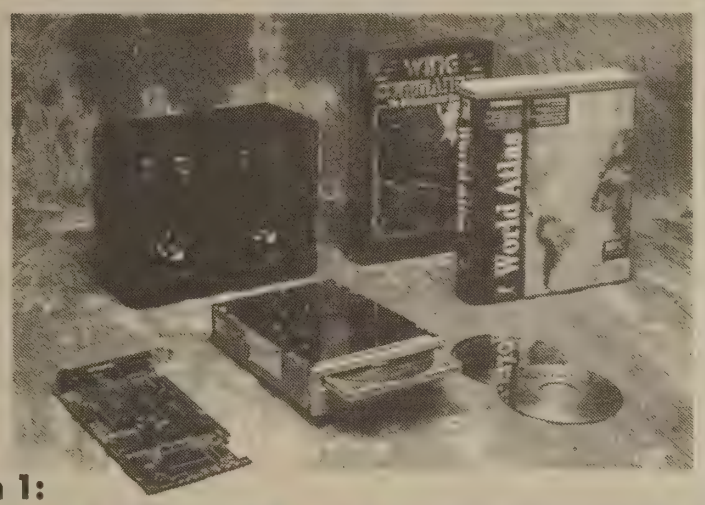

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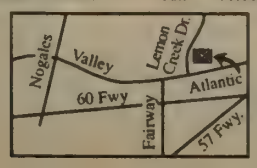

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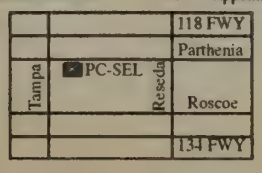

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continued from page 54

tium of industry and government partners to develop and implement a system for advanced cooperative work. With the world apparently finally ready for groupware, expect Engelbart to play a vital role.

Mark Eppley

Chairman and CEO

Traveling Software

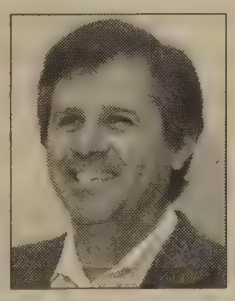
Since founding Traveling Software in 1982, supporting such emerging markets as the Radio Shack Model 100, Eppley has had a clear sense of the importance of portable computing and its relationship to the desktop—and capitalized on its unique user requirements with such products as LapLink.

Now, however, Eppley believes, a fundamental paradigm shift is at hand. "The extended office will give rise to a new way of using computers, one that will allow users to have a computer device with them at all times. The emergence of the extended office will require the confluence of a number of technologies, not the least of which will deal with moving information from one place to another by a variety of channels, many of which are not commonly used today.

"The key to the communications-centric computers of the 1990s will be miniaturization and portability. By the end of the decade, many workers will own several computers that perform various specialized functions. But, unlike previous computing paradigms, the 1990s will be an era when all of these devices from the smallest handheld 'pad' to a powerful desktop workstation will be linked, allowing instant access to information."

Eppley has worked to position his company to take advantage of this shift, not only by extending the LapLink product to platforms including the Casio B.O.S.S. but by entering into OEM agreements with a host of hardware vendors from Apple (with Newton, the first platform to incorporate Traveling Software's Universal Communication Object technology for cross-platform file exchange) to WordStar.

Amnon Even-Kesef



President and Cofounder

ASP

ASP is a classic example of the Silicon Valley startup that succeeds by finding solutions for a specialized but common problem—in this case, low-cost printer sharing, easily done with Macs but a real problem with PCs. Even-Kesef spearheads the company's development and marketing efforts, which have resulted in a full-featured line of plug-and-play printer-sharing products for standalone and networked environments, and in global, multichannel sales to customers from OEMs to end-users. As a result, the company is generally recognized as the leader in its well-defined market.

David, John, and Randy Fry

Kathryn Kolder

Fry's Electronics

The Fry Bros. expanded their culturally unique superstore chain into Southern California in 1992, enabling Southland as well as Silicon Valley techs to engage in one-stop shopping for all their computing and junk-food needs. Meanwhile, general manager Ms. Kolder added to her hectic schedule by serving as an insightful participant in industry panels trying to come to terms with such issues as the convergence of the personal computer industry with consumer electronics.

Bill Gates

Chairman and CEO

Microsoft

Clearly, one of 1992's big winners. (See introduction)

John Gilmore

Renowned programmer Gilmore has cofounded several organizations over the years, including EFF and Cygnus Support, that relate to various aspects of public access to information. In the case of Cygnus, its staff has made a growing and successful business by offering paid support services to government and corporate users of free UNIX software.

Probably his most noteworthy accomplishment came at year's end, when, as part of his ongoing effort to secure access to government text on cryptography (technology of growing importance for corporate and private communications), he came into conflict with the National Security Agency. It seems that seventeen years ago some significant but aging cryptography texts had been declassified and made publicly available, even ending up on the shelves of public libraries. For somewhat mysterious reasons, the documents were reclassified during the Reagan administration, but a few texts remained in the libraries, where Gilmore found and copied them.

When, as part of a larger FOIA action to access government crypto documents, he let it be known that he had these books and sought clarification of their status, he was briefly threatened with prison and other dire legal action by the NSA, which said that general access to the documents would make its eavesdropping efforts more difficult. After several days of intense press interest in the matter, however, the NSA backed down and decided to redeclassify the documents, opening the door to improved private-sector aspects to cryptographic research and tools.

Nat Goldhaber

CEO

Kaleida Labs

Goldhaber's penchant for connectivity entered a new dimension with his arrival at Kaleida, the multimedia-technology joint venture between Apple and IBM. As he told John Perry Barlow in our cover story in Issue #102, "This is absolutely mind-bogglingly mischievous, because it affects virtually all of the power centers and all of the economic centers in this country today, period. And if it's done right, it has a remarkably democratizing effect, a remarkably empowering effect, on people who are fundamentally disenfranchised right now, for whatever reason."

We look forward to his and Kaleida's subversive exploits with glee.

Joe Gradecki

Publisher

PCVR

Michael Conduris of San Francisco's VR Institute recommends Gradecki for this year's list for his work in publishing the *PCVR* journal, which serves as a valuable resource for virtual reality pioneers, especially cash-strapped ones.

Says Conduris, "The magazine has helped countless people harness the power of homebrew virtual reality. [Gradecki] has demonstrated that networked virtual reality over the Internet is possible; he helps you create a homebrew VR helmet, and shows you how to build a head tracking device for under $10. He is also very helpful over the phone with people trying to learn about this technology."

Steve Greenburg

President

Golden Gate Computer Society

A reader identified only as W.J. praised Greenburg highly and earnestly recommended that we add him to this year's list in recognition of his effective work with GGCS. Not only has Greenburg provided useful resource to current computer users, says W.J., "He's done a great deal of good in bringing new people into the computer arena."

So, in happy concurrence with W.J., we're happy to salute Greenburg for his user support and expansion of the computer community.

Andrew S. Grove

President and CEO

Intel

In a year of emerging markets and confusing transition between standards, the reign of Intel shows no sign of ending (see introduction).

William F.X. Grubb

President and CEO

The Complete PC

Grubb, who in a previous life was the founder and president of one-time game publisher Imagic, has led The Complete PC to a leadership position in the area of business communications, with such products as scanners and fax modems. Beginning with some of the industry's earliest voicemail and fax accessories for PCs, the company now offers a sophisticated array of products with wide acceptance. Its most recent innovation, The Complete Communicator series, integrates modem, fax, scanner, and voicemail features on a single affordable board, and is a hit with both corporate and individual users.

George Hara

Founder

Alliance Forum

Venture capitalist and entrepreneur Hara provides a significant resource for the high-tech entrepreneur who's thinking about expanding into global markets. If a company's contemplating business ventures in Japan, the Alliance conferences offer a unique learning and networking situation,

with candid presentations by industry leaders and unmatched opportunities to connect with potential strategic partners.

Tom Hayes

Chairperson

Joint Venture: Silicon Valley

For years, as the cost of living's increased, the quality of life has gone downhill, and high-tech companies have consequently found it harder to do business in the Valley, there has been much hand-wringing and little action. Hayes leads this ambitious coalition of city governments, Chambers of Commerce, and industry in an effort to turn around these negative trends and work together to create a healthy economy and living environment, thereby keeping Silicon Valley productive and competitive in the decades to come.

Mark Hoffman

Chairman, President, and CEO

Sybase

Hoffman and his colleagues started Sybase in the belief that client/server based computing was the wave of the future, and the company's success (a fast-gaining second to Oracle in the relational database market, earning a top-20 position in Fortune's list of fastest-growing companies for the last two years) shows the accuracy of that vision. Pursuing a strategy of alliances with other vendors rather than attempting to provide closed solutions has also been a key element, giving Sybase the ability to link together diverse and often-conflicting hardware and software into smooth-running enterprise-wide systems.

Arthur Hsiao

President

Southern California Chinese Computer Association

Entrepreneur and systems integrator Hsiao has been a driving force behind the creation and acceptance of SCCCA. While small PC-compatible companies faced formidable challenges in 1992, with price-cutting driving many out of business, the SCCCA has allowed its members to work together and pool their resources to achieve better solutions for their customers and success for themselves.

Dave Hughes

Operating Officer

Old Colorado City Communications

Global telecomm's most notable frontiersman made a few more road trips and opened up some new territories in 1992, from online politics to international bridge-building. In his ongoing quest to create truly global online software technology that permits cost-effective graphics display for pictures and script, he's joined forces with some Moscow-based programmers to build a NAPLPS-based program. We await the next year's developments with interest.

Steven P. Jobs

President and CEO

NeXT

While still fighting an uphill battle to gain market share for his technologically sophisticated workstation, Jobs announced a startling and strategically significant move to gain acceptance in the marketplace—the porting of the NeXTstep operating system to Intel architecture. Ultimately positioned against Windows NT and Sun's Solaris, the OS offers some clear advantages over both, and its availability for 486 machines and the upcoming Pentium architecture is expected to make NeXT an attractive option in corporate environments.

Reese Jones

Chairman

Farallon

Farallon's founder has brought the company from its origins as the purveyor of BMUG's low-cost alternative to AppleTalk to the preeminent supplier of Macintosh networking products—its PhoneNet technology accounts for two-thirds of the installed base of Mac nets. But as multiplatform connectivity has become a key component of the network marketplace, Farallon has also moved into the Windows market, allowing Mac and Windows users to share files and peripherals on the same network. And in view of the number of SPARC machines in Farallon's booth at InterOp, it seems like a safe bet that Farallon will also be a key player as Mac and Windows machines connect to the UNIX world...

Philippe Kahn

Chairman, President, and CEO

Borland International

1992, Kahn told Dick Shaffer with characteristic forthrightness at the recent PC Outlook conference, "has been the worst year of my life."

Borland spent most of the year working on incorporating Ashton-Tate into the company and revamping all its applications to take advantage of its new object-oriented environment; the result, of course, was inevitable product delays, coupled with predictions of doom from the peanut gallery. Not to mention Microsoft's acquisition of Fox and subsequent entry into the database business.

But, as Kahn is fond of remarking, when he started the company in 1983, people said he had no chance.

One bright spot in 1992 was the long-delayed shipment of Quattro Pro for Windows in September; within three months, it was second only to Excel in the Windows market. And, with Windows Paradox due in early '93 and Windows dBASE shortly thereafter, Kahn will probably confound his competitors once again.

Jerry Kaplan

Chairman

Bill Campbell

President and CEO

Robert Carr

Vice President of Software

GO

1992 saw the arrival of the first products utilizing GO's PenPoint operating system, and it's off to a promising start. A significant player in the mobile computing market, GO offers a powerful challenge to Microsoft in setting the open-architecture standard.

Object-oriented technology aside, GO's OS offers the advantage of running on different processors—it's been ported to AT&T's Hobbit chip, for instance, and will run on EO's Personal Communicator line, due in early 1993. It is also a key component in the future products of hardware vendors overseas, particularly in Japan.

Mitch Kapor

PHOTO: SETH RESNICK

President

Electronic Frontier Foundation

Reader Sam Chen writes that Kapor "has contributed greatly to protecting the end-user's civil rights and electronic freedom when the FBI is trying to do the opposite." But while there is no shortage, in the field of electronic civil liberties, of law-enforcement bashers among the hacker community, hacker-bashers in the law enforcement community, a high Fear Uncertainty and Doubt factor in business, and a general tendency to substitute demonizing your adversaries for trying to understand their viewpoint, Kapor stands out as a notable exception. He's been able to work with various constituencies to build rather than burn bridges, and has been instrumental in averting potentially harmful legislation such as the FBI's Digital Telephony proposal.

Arjan Khalsa

President

Intellitools

While it doesn't necessarily get a lot of fanfare, one of the greatest benefits of computer technology is its ability to provide tools for children, the disabled, and applications somewhat outside the mainstream. Khalsa and his company have worked for years to create useful, innovative products for these markets.

In 1992, the company began to ship Khalsa's invention, the IntelliKeys keyboard, which, with accompanying software and overlays, allows users of Apple II, Macintosh, and PC compatible computers to configure their keyboards to a variety of special purposes, from child-oriented interfaces to point-of-sale systems.

Ed LaHood

President

VREAM, Inc.

The VR Institute's Michael Conduris suggested we include LaHood on this year's list to honor his work in bringing virtual-reality capability to the PC environment. Says Conduris, "He single-handedly developed the first and most advanced non-programmer's version of a virtual reality development software package for the IBM PC. It's the most advanced on the market because it not only allows you to import textures and DXF files but also allows a user to program sophisticated dynamic links within virtual worlds—for example, when a person grabs a virtual book off a virtual bookshelf, a secret door will appear. No other so-called 'VR package' even comes close to the sophistication of this program [the VREAM Virtual Reality Development System.]"

We have a feeling this system will play a key role in the development of future entertainment packages, and probably find a host of "serious" applications as well.

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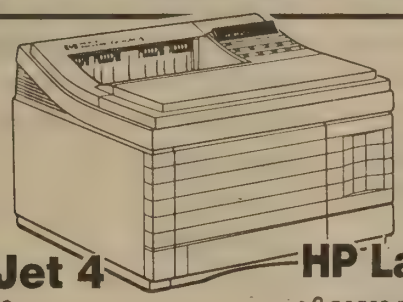

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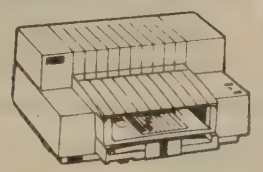

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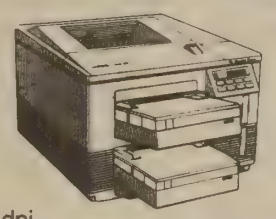

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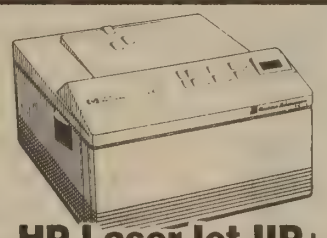

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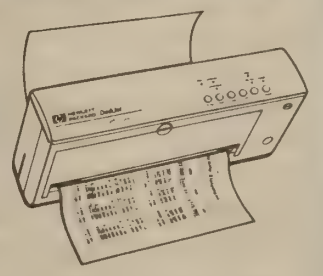

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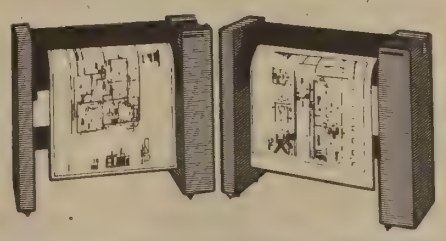

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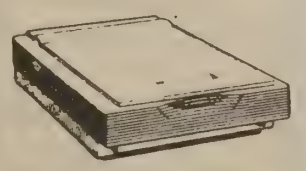

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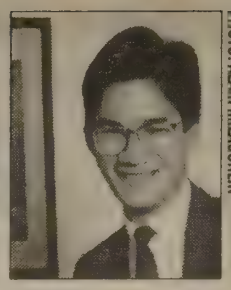

PHOTO: ALANN MCLAUGHLIN

This time last year, the future of Spectrum Holobyte was looking uncertain. True, the Falcon flight simulators were selling well, and likewise the whole Tetris family, but alas, the company was owned by the Maxwell empire, which was in a state of financial collapse.

However, the company managed to keep developing and shipping games on schedule and launched a highly successful foray into the 16-bit Super Nintendo/Sega Genesis market, and things are looking good for Spectrum Holobyte.

Louie managed to put together an impressive group of investors—ranging from leading venture capitalists Kleiner Perkins Caufield and Byers to Silicon Graphics chairman Jim Clark, not to mention AT&T—to buy the company back from the Maxwells and fund an ambitious sales, marketing, and product development effort in the area of interactive entertainment. And, at year's end, he had hired Barry James Folsom as the company's new CEO.

Among the company's new market directions is a national chain of Star Trek: The Next Generation virtual reality centers—which will use Silicon Graphics workstations to run state-of-the-art VR software.

Jim Manzi

Chairman, President, and CEO

Lotus Development Corporation

PHOTO: BILL GALLERY

For several years now there have been plenty of allegations that Lotus is a single-product company doomed to extinction as competitors erode the market share of 1-2-3. Without conceding the spreadsheet market to anybody—the long-deferred 1-2-3 for Windows has shipped and further enhancements are in the works—Manzi has worked to broaden the company's base and keep it competitive in emerging markets. Among the indications that this strategy is succeeding is the rapid growth of the market for Lotus Notes and cc:Mail, targeting the workgroup/collaborative computing area.

Michael Marvin

Chairman

MapInfo

Another technology market moving from the niche to the mainstream is Geographical Information Systems, and Marvin, who's been with MapInfo since its foundation in 1986, has led it to a position of #23 on the *Inc.* Magazine list of fastest-growing private companies and a preeminent position in its market.

MapInfo desktop mapping software works with popular spreadsheet and database programs on Windows, Mac, DOS, Sun, Hewlett-Packard, and other systems to allow businesses to view their information in a geographical context. This approach allows for analysis of trends, patterns, and relationships that aren't necessarily evident on text-based database and spreadsheet reports, and makes computers into far more versatile tools.

Scott McNealy

Chairman, President and CEO

Sun Microsystems

It was another great year for Sun, with new SPARC hardware and the long-awaited Solaris operating system software shipping and reinforcing the company's preeminence in the workstation marketplace. The company continued to gain market share in the commercial environment—commercial client/server systems now account for a third of its business, with the rest in its historically strong technical market.

In the battle for the networked power-user's desktop, McNealy appears to be pursuing a successful dual strategy with regard to Intel and Microsoft—conceding no turf to Microsoft and the NT platform in the Intel world, he's made sure Sun's operating system runs on Intel platforms. Nonetheless, he's also consistently maintained the superiority of Sun's RISC-based SPARC architecture, which has itself become a significant standard in the workstation world. Whichever way the market goes, Sun's ready to take advantage of it.

Nathan Morton

President and CEO

CompUSA

Probably no organization represents the dramatic shift in the computer sales channel as well as this successful national chain of superstores, led by longtime retail veteran Morton. Despite oft-expressed skepticism that Morton could maintain the company's initial success and continue its meteoric growth, his leadership and ability to convince the analysts have silenced most of the skeptics. In 1992 the company not only went public but completed a second stock offering in October, and expanded its operations into new areas, notably the New York market.

Therese Myers

President and CEO

Quarterdeck

From Quarterdeck's startup days, Myers has maintained a fierce commitment to helping budget-minded users get better performance out of their hardware. The company entered a new era in 1992 with the shipment of DESQview/X, software which allows PCs to emulate UNIX-based X Windows terminals and run X applications that reside on network servers. As computing environments become more heterogeneous and DOS users start contemplating the UNIX environment, DESQview/X provides an easy transition and painless upgrade path.

Ray Noorda

Chairman, CEO, and President

Novell

Noorda's shrewd instincts for strategic alliances, good customer relations, and support for a full range of hardware and software have kept Novell the undisputed leader in the network world. Last year's acquisition of Digital Research, whose DR DOS is regarded by many as a superior operating system to the Microsoft version, has provided Novell with a powerful strategic weapon for its impending clash with Microsoft's coming Windows for Workgroups.

As networks become an integral part of computer-based work, Novell is clearly planning to take on the giant Microsoft, and appears very well positioned to be one of the dominant players in the next generation of computing.

John Norstad

Author

Disinfectant

Viruses are an ongoing problem in the computer-using community, and many commercial organizations have arisen to deal with them. Norstad, however, continues to keep his product Disinfectant up-to-date (it usually has a fix for new infestations long before the commercial products do) and give it away, earning the undying gratitude of Mac users everywhere.

David Packard

Chairman

John Young

CEO (retired October 1992)

Lewis Platt

CEO Hewlett-Packard

One of our readers writes that Hewlett-Packard is "a very well-run company that has been around 50 years and will be around another 50!" On the whole, this seems like a conservative estimate. Two years ago Packard and Young, who served as CEO from 1978 until his retirement in October, became concerned with the company's straying from its roots in the famed H-P Way and losing its ability to innovate and adapt to changing markets. Unlike some other venerable giants facing this problem, they achieved a rapid turnaround, which Young attributed in large measure to Platt's work, particularly his aggressive introduction of new workstation technology to keep the company a formidable competitor with Sun.

After taking over as CEO upon Young's retirement, Platt announced his intention to keep Hewlett-Packard a dynamic player in emerging technologies, with particular emphasis on communications technology and hand-held computers. Expect to see the growing popularity of the HP95LX palmtop parlayed into a wide range of devices positioned to take advantage of the emerging "personal digital assistant" market.

Gayle Pergamit

Cofounder, Director of Marketplace Development

American Information Exchange (AMIX)

PHOTO: MURRY KALISH

Pergamit (whose other accomplishments include coauthorship with Eric Drexler and

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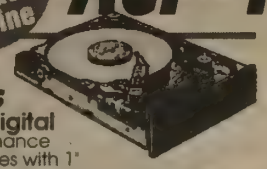

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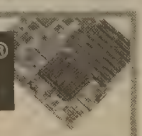

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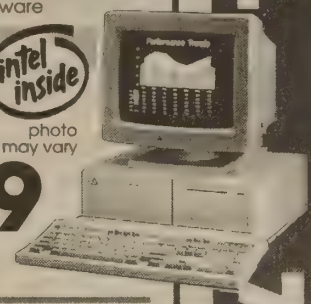

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PC MAGAZINE EDITOR'S CHOICE

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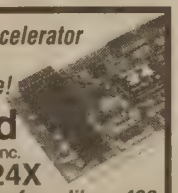

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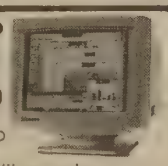

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Chris Peterson of the popular nanotechnology book *Unbounding the Future*) cofounded AMIX in 1986 to develop an emerging and previously neglected opportunity—allowing buyers and sellers to network and exchange digital goods (books, articles, and other content) and services (programming, consulting, etc.) online. AMIX's path to becoming "the only online service that sends *you* a check at the end of the month" has been strewn with obstacles, most recently its divestment from former parent Autodesk, but PC users are already online exchanging everything from science fiction to Smalltalk code. With the arrival of the long-awaited Macintosh version in 1993, an expanding user base is expected to broaden AMIX's scope of customer offerings considerably.

Ron Posner

President and CEO

WordStar International

What do you do with a company whose chief asset, a once-proud word processor, has irrevocably lost its position as an industry standard?

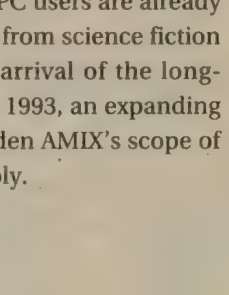
Posner, arriving at WordStar a few years ago with the mandate to save it from impending catastrophe, has restored it to prosperity with an approach that's a microcosm of a significant change in the industry itself. Instead of committing the company's resources to a losing battle for corporate market share, he decided to focus on the emerging consumer market and mass sales channels.

The effort has paid off handsomely—the company has a broad range of consumer software that's doing quite well, and a genuine hit with the American Heritage Dictionary, which not only enjoys good standalone sales but is a key component in bundling deals with both Apple and IBM.

Further taking advantage of emerging markets, Posner also recently entered into a merger with ZSoft, producer of PC Paintbrush, PhotoFinish, and UltraFAX. The latter is expected to be particularly significant in the company's future, representing a leading entry in the fax/OCR market.

Jerry Pournelle

Columnist

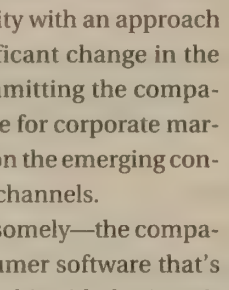


Pournelle's *BYTE* column is one of the longest-established information resources for the computer user, beginner and expert. Pournelle is definitely opinionated, but also endowed with a strong commitment to finding the truly useful products and passing the word along to his readers. As a result he continues to inform and entertain his faithful readership and acquire new fans every month.

Safi Qureshey

President and CEO

AST Research



While there was certainly a shakeout in the PC-compatible industry in 1992, AST had another year of record sales. And while some speculated that Qureshey would have problems running the company after the departure of cofounder Tom Yuen, he appears to be firmly in control of his company's strategy.

And a diverse strategy it is, with AST building products from notebook computers to multi-486 parallel processing machines designed to run Windows NT in multiuser environments. While sticking to industry-standard platforms (Qureshey shuns RISC chips and sticks with the Intel standard), the company innovates in design and customer responsiveness, offering such unusual options as upgradable screens for notebook computers. In addition, the company does nearly half its business overseas and is a formidable global competitor.

Alex Razm'joo

President

Procom Technology

Iranian-born Razm'joo founded Procom in 1987 with three of his friends from UC Irvine and, despite hard times in the disk drive industry, has led the company to phenomenal growth, with sales of $43 million in fiscal 1992 and projections of $65 million for fiscal 1993, with a gross profit margin of 35%.

From its beginnings, capitalizing on the arrival of 3½" drives by marketing an external 5¼" unit, the company has invested heavily in R&D and come up with a number of innovations to enhance performance, ease of use, and reliability for its SCSI drives. It is especially strong in network storage and multimedia, and thereby well positioned to take advantage of these rapidly growing markets.

Jack Rickard

Editor

Boardwatch

As computer-based communications become an increasingly vital part of daily life, Rickard's magazine, which covers the BBS community, its people, products, and evolving issues, finds ever-wider audiences. Recently he's created a new resource for sysops and users—the annual BBSCON conference, which brings BBSers together from around the globe to discuss common problems and solutions.

John Roach

Chairman and CEO

Tandy

1992 was the year consumer electronics met the computer industry, and few companies were better positioned to take advantage of this than Tandy, with a host of new multimedia products and an expanding network of superstores featuring state-of-the-art merchandising techniques.

In August, Roach announced the creation of a new digital information format called the Video Information System, a CD-ROM based technology capable of utilizing both VGA and standard TV display technology. "This new format," said Roach, "enables us to create a unique product class that will provide a window to the world of digital information for the mass consumer."

Jerry Rogers

President and CEO

Cyrix

Rogers states the mission of the company, founded three years ago, as bringing about the "end of the microprocessor monopoly." And, while it's successfully avoided some of the legal tribulations of AMD by not using Intel microcode in its chips, it also is involved in long-running patent hassles with Intel's lawyers. Rogers professes himself unworried by all this.

Meanwhile, in the few short months it's been shipping microprocessors, Cyrix has created a boon for cost-conscious, power-hungry hardware vendors and consumers alike, offering unmatched features like a 486-compatible chip that fits in a 386 socket.

As for Intel's decision to call its new product line "Pentium" because the name has been judged more legally protectable than its traditional 80x86 numbers, Rogers allows as how he'll be quite happy to call his future chips 586 and his customers will be happy to buy them.

Heidi Roizen

CEO

T/Maker

T/Maker has become a leader in the electronic content business, finding a lucrative market in distributing a full range of clip art products. During 1992, the company not only shipped its long-awaited new version of the WriteNow! word processor, it took advantage of the increasingly ubiquitous fax-modem to introduce FaxMania!, a wildly successful product that lets users send and customize a full range of eye-catching fax cover sheets.

Lance Rose
Jonathan Wallace

Authors

Syslaw

One of the few downsides to the phenomenal growth of the BBS community is the proliferation of legal pitfalls awaiting the unwary sysop, ranging from privacy to copyright law to viruses to obscenity ordinances. While many areas remain murky, this new edition of *Syslaw* is an indispensable resource for current and prospective BBS operators, illuminating the present and evolving state of the law in relevant areas.

Ben Rosen

Chairman

Eckhard Pfeiffer

President and CEO

Compaq Computer

With Compaq losing profits and market share to competitors like Dell in 1991, Rosen ousted cofounder and CEO Rod Canion and instituted a drastic change in the company's direction.

In 1992 Rosen and Pfeiffer have dramatically reversed the company's downward trend, introducing a competitively priced line of low-cost clones, broadening distribution into such outlets as Circuit City and CompUSA, and introducing CompaqCare, an extensive support program including a one-year limited on-site warranty and toll-free technical support for all products.

Alain Rossman

President and CEO

EO, Inc.

Earlier in his career, Rossman headed Apple's Macintosh software evangelism efforts and cofounded both Radius and C-Cube. His new company offers

continued on page 144

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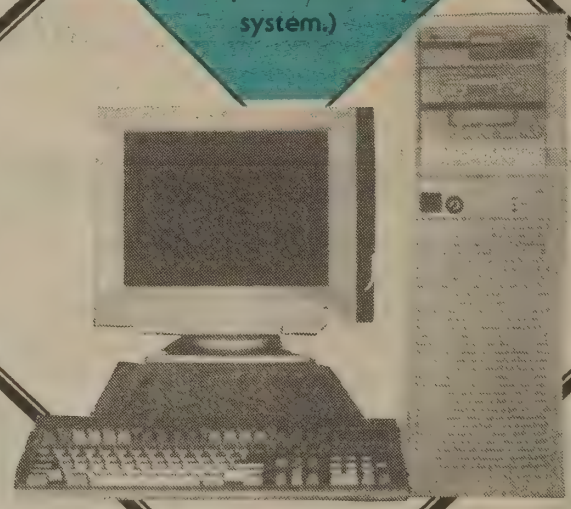

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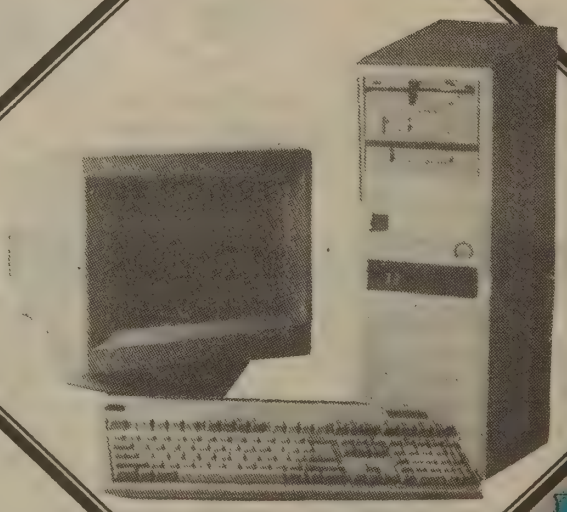

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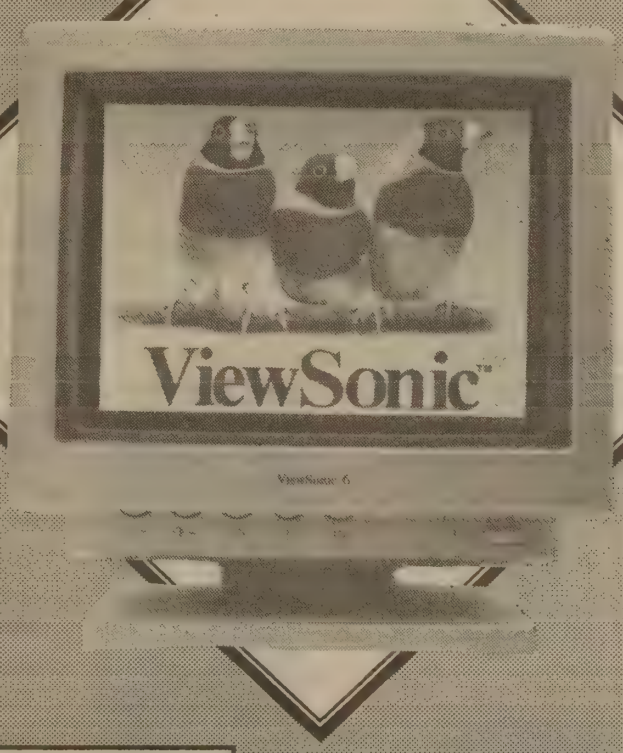

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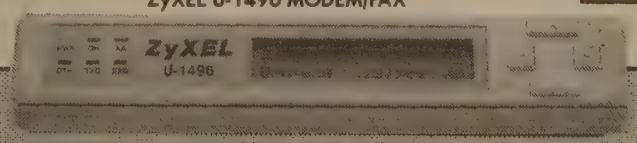

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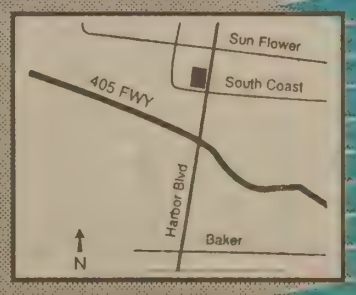

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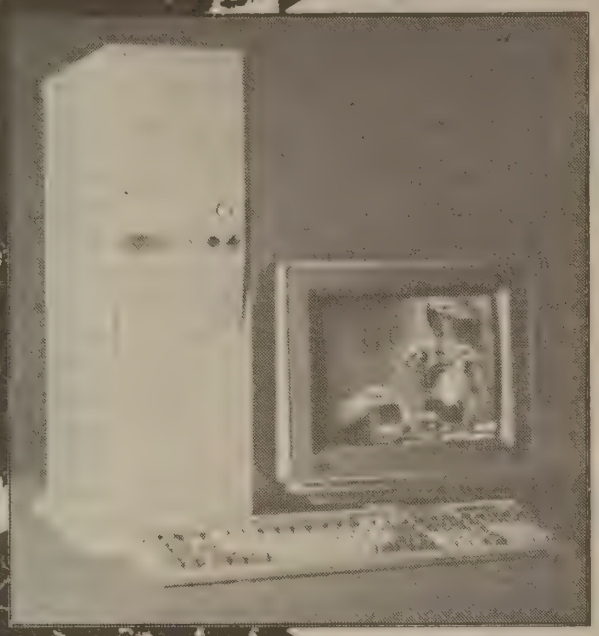

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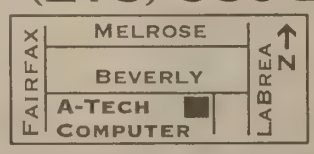

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NEWS & VIEWS

Continued from page 28

(Boulder, CO)—was the first one we knew of that allowed simple replacement of disk drives, memory, and CPUs by sliding one out and sliding a different one in—just like desktop units. In October, Amrel Technology (El Monte, CA) announced a line of field-upgradable laptops allowing the user to create 486s from 25MHz to 66MHz, with 4 to 16MB of RAM, 80 to 200MB of disk, SRAM cache, fax/modem, and a desktop dock with two 16-bit ISA slots.

There's obviously no technical excuse for continuing to make dead-end, nonupgradable laptop systems—nor to buy them.

QUICKIES

CFP'93, the **Third Conference on Computers, Freedom & Privacy**, is returning to the "correct" coast—scheduled for March 9–12, 1993, on the San Francisco Peninsula. For details, contact Bruce Koball, CFP'93 Chair, 2210 6th St., Berkeley CA 94710; (510)845-1350, fax (510)845-3946, email cfp93@well.sf.ca.us.

The California Public Utilities Commission has a BBS (computer bulletin board system) at (415)703-1297 (1200/2400, E71). It provides online access to meeting information, agendas, commission decisions, news releases, etc. Neat idea, but it does *not* seem to provide a channel for submitting testimony and public input to the Commission—apparently it's outPUC only.

The 1991 Computers, Freedom & Privacy conference was much concerned about unauthorized use of personal information. Participants received a roster of attendees, listing information that attendees had permitted to be distributed to participants. Within weeks, unrelated groups were direct-mailing to those names, promoting their ventures. Now, even COMDEX is using it. Ain't much privacy in the global village—with or without computers.

Former *Palo Alto Times* reporter Jay Thorwaldson, who covered the acid-eatin', dope-smokin' hippie '60s in which numerous current industry leaders gleefully participated, notes that, "I'm wired!," has a very different meaning when exclaimed by the technoids of the networking '90s than it did in those stoned-out '60s. Hmmm—or does it?

MIND-MELDING FOR ALL

Send your futures-to-make to Realizable Fantasies so we can share 'em with everybody else. 345 Swett Rd., Woodside, CA 94062 or email to jwarren@well.sf.ca.us. Published proposals will be attributed to their authors, unless anonymity is requested. ■

Warren founded InfoWorld, *the DataCast proposal for paperless electronic newspapers, Wireless Digital, Initiative, Inc., and one of the nation's largest public microcomputer conventions. He was founding host of PBS's* Computer Chronicles, *founding editor of* Dr. Dobb's Journal, *and has chaired various trade and professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics & statistics, and once chaired the College of Notre Dame-Belmont Mathematics Dept.*

He organized and chaired the landmark First Conference on Computers, Freedom & Privacy (1991) sponsored by a dozen nonprofit civic, professional, and industry organizations and received one of the first Electronic Frontier Foundation Pioneer Awards (1992). He is a member of the board of directors of Autodesk, Inc., and also chairs the Communications Committee of the California Public Records Act Reform Coalition.

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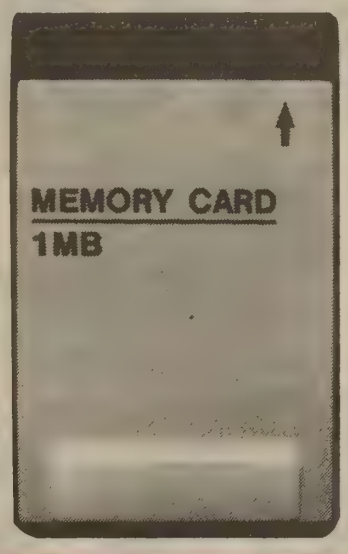
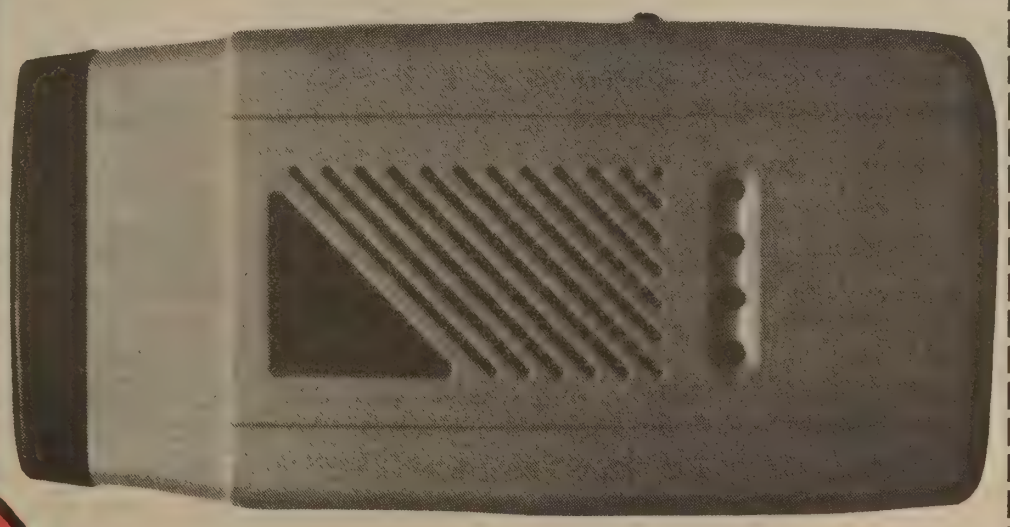


Try Cutting This Picture Out and Placing It In Your Pocket.

Nu Laser

(Modem shown at actual small size.)



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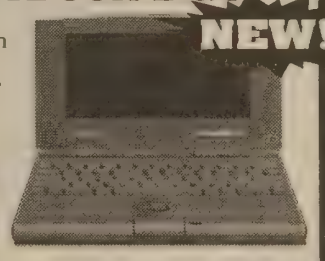

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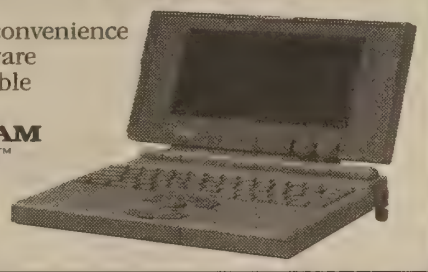

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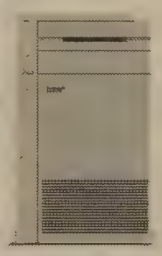

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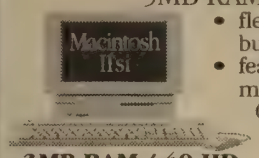

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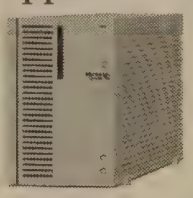

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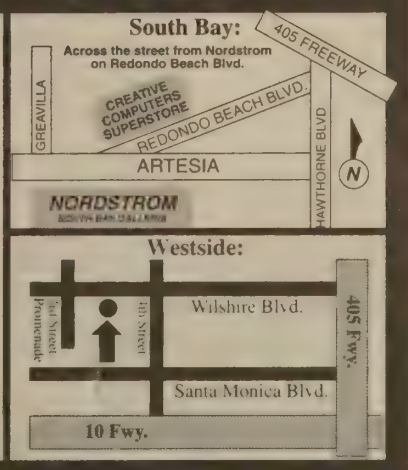

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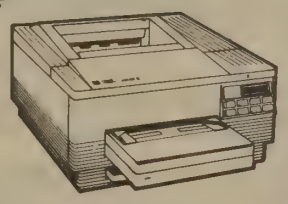

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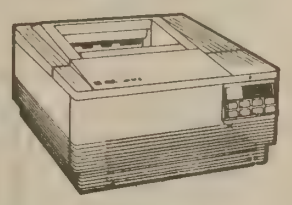

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The Mikey Awards

Top Ten Computer Games Of 1992

Sharply Falling Computer Prices Helped To Make 1992 A Boom Year For Entertainment Software

BY MIKE MARKOWITZ

On the MS-DOS side, which represents at least 85% of the market, significant trends included the growing dominance of Microsoft Windows, the shift to Super VGA as the video graphic standard, and the increasing importance of stereo sound output, either as a built-in feature of the system or as an add-on component. On the Macintosh side there was less to celebrate, although a few determined publishers continue to develop great products.

On both sides, the most alarming trend was the rampant increase in the size of games. It is now common for a single game to take up 5–10MB of hard disk space. For most users, installing a new game now requires a painful decision about what to delete to create enough space.

The long-term solution is probably the CD-ROM, which can store enough program code, high-resolution animated graphics, and digitized sound (about 500MB) to meet the most exacting demands of the next generation of gamers. A CD can be mass-produced at lower cost than the typical stack of floppy disks a state-of-the-art game requires. It is also ready to play right out of the box, without the elaborate installation and decompression routines gamers must now endure. And copy-protection is not even an issue, at least until erasable optical media become commonplace. As more titles are published and drives get cheaper and faster, let's hope that 1993 will finally be the Year of the CD-ROM in computer entertainment.

PICKING THE BEST GAMES

Judgments about the quality of most software products can be based on more or less objective criteria: performance benchmarks, comparative lists of features, documentation, support, etc. But judgments about the quality of a game are ultimately subjective: Did I have fun or not? What is fun for you may be boredom or torment for me.

In my own game evaluations I try to consider four main elements: graphics and animation, sound, user interface, and overall value. Attributes of a game are rated on a scale from 0 (the worst) to 9 (the best). "Graphics" includes the artistic quality of the images, the smoothness and realism of the animated motion, and effective use of color (if applicable). Sound used to be a simple matter of beeps and boings, because that was all most computers could produce. With the growing use of digitized sound effects, musical backgrounds, and synthesized speech, the audio channel is an increasingly important part of the gaming experience. But game designers should always make it possible to turn the sound off, to avoid annoying the neighbors.

"User interface" is a composite of several factors, including screen layout, appropriateness of game controls, ease of learning, and quality of documentation.

"Overall value" is a highly subjective global rating, not an average of the other attributes. Part of "overall value" is a game's staying power—can you keep coming back to it with fresh enjoyment, or does it lose its charm once you figure out a few tricks? To rate as a Mikey Award nominee, a game needs an overall value rating or 7, 8, or 9. These numbers are for comparison only; your mileage may differ.

This year I've revised the categories to focus more on the areas of interest that I can manage to follow closely. I play, review, and work with about a hundred new games a year. But the number of new titles published every month is so great that nobody with a real life could possibly cover the entire spectrum of computer entertainment.

1. Best War Game (Land)

V for Victory

Published by: Three-Sixty Pacific
2105 S. Bascom Avenue, Suite 380
Campbell, CA 95008
(408)879-9144

For: MS-DOS (386 and 4MB of RAM recommended)

List price: $49.95

This huge simulation of the Normandy invasion of June 1944 is detailed down to the battalion level and historically very accurate. The very clean game system is being adapted to provide a series of games on other WWII battles. Excellent manual. Needs some bug fixes, but this series promises to be a major delight for hardcore war gamers.

2. Best War Game (Sea)

Carriers at War

Designed by: Roger Keating and Ian Trout

Published by: Strategic Studies Group
8348 Monticello Drive
Pensacola, FL 32514
(904)494-9373
Fax (904)494-9374

For: MS-DOS (640K, EGA/VGA graphics, supports AdLib or Sound Blaster audio card, mouse recommended); Macintosh and Amiga versions under development

List price: $69.95

Simulates the naval air battles of Pearl Harbor, Midway, The Coral Sea, The Eastern Solomons, Santa Cruz, and The Philippine Sea, down to the level of an individual aircraft, bomb and gun salvo. Highly playable and bug-free, this game will gain additional staying power once the separate scenario editor is released.

3. Best War Game (Air)

Secret Weapons of the Luftwaffe

Published by: Lucasfilm Games

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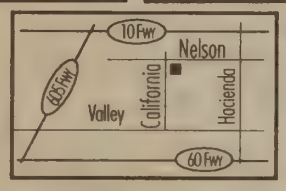

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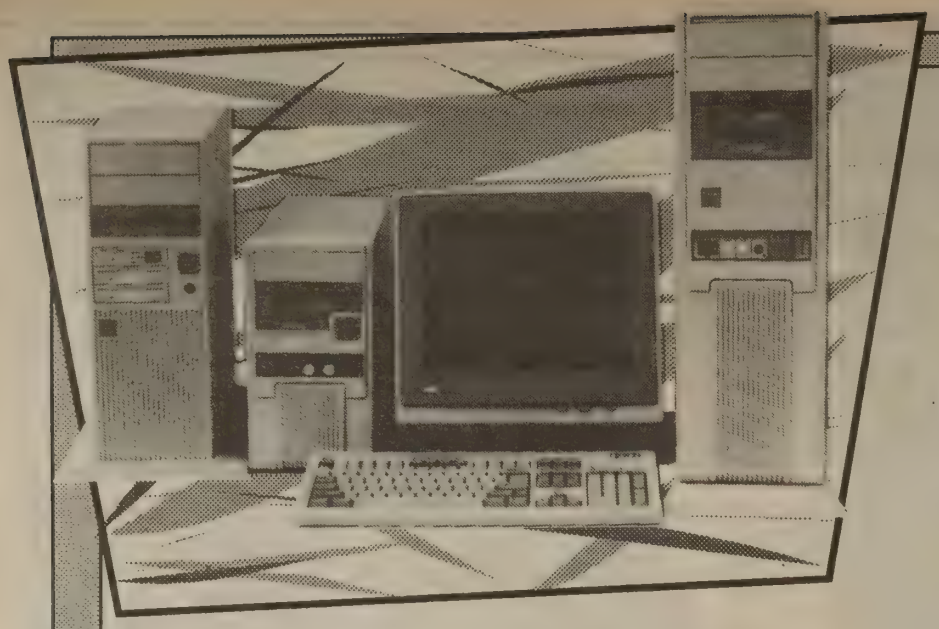

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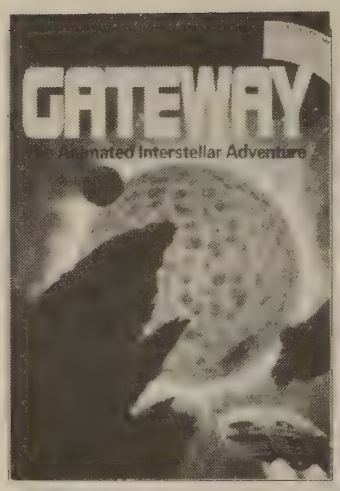
For: MS-DOS
List price: $69.95

Toward the end of the Second World War, when it was too late to make a difference, the Nazis deployed a number of revolutionary aircraft including the Me-262 jet fighter and the M-163 rocket-powered interceptor. This game lets you pilot a variety of aircraft from either side in a variety of missions from simple dogfights to extended campaigns. The controls are relatively simple, so that the mechanics of flight simulation never overwhelms the fun of the game. As you would expect from Lucasfilm, the graphics and sound are superb. A series of $29.95 add-on disks provide additional aircraft, such as the Lockheed P-80 Shooting Star and the He-162 Volksjager.

4. Best Science Fiction Game



Gateway
Designed by: Legend Entertainment
Distributed by: Accolade
5300 Stevens Creek Blvd.
San Jose, CA 95129
1-800-245-7744
For: MS-DOS
List price: $59.95

Based on the popular Frederic Pohl book of the same name, this graphic adventure proves that a great science fiction novel can be adapted into an intelligent, challenging, and playable game. Should be seen in 256-color Super VGA to be appreciated. Very clean mouse-driven user interface.

5. Best Adventure Game

Darklands
Designed by: Arnold Hendrick
Published by: MicroProse
180 Lakefront Drive
Hunt Valley, MD 21030
(410)771-1151
For: MS-DOS (640K, VGA graphics, mouse and audio card recommended)
List price: $69.95

Real medieval history meets the sword-and-sorcery format. A huge, open-ended and richly textured exploration of Central Europe in the 15th century. The combat animation is blocky, and some of the action gets repetitious, but this will stand as a landmark in game design, especially when all the bugs are patched.

6. Best Educational Game

Zookeeper
Programmed by: Larene Wade Spitler
Published by: Davidson
PO Box 2961
Torrance, CA 90509
1-800-545-7677
For: MS-DOS (640K RAM, 8MB hard disk space, 12MHz 286 or faster CPU, VGA graphics and mouse required, most audio cards supported)
List price: $59.95

Combines spectacular digitized animal photographs with an environmental message about habitats and endangered species. Guest review by my niece Lauren (fifth grade): "Thank you so much for the really cool game. I play it all the time. It's my favorite game. I'm already an Elephant Washer!!"

7. Best Simulation

SimLife: The Genetic Playground
Designed by: Ken Karakotsios
Published by: Maxis
For: Macintosh (2MB for monochrome, 2.5MB for color, System 7 compatible, but requires more memory) MS-DOS version to be released early in 1993
List price: $69.95

The most ambitious "software toy" so far from the creators of SimCity. You can create a world and populate it with creatures of your own design, then let them be fruitful and multiply as you juggle genetic and ecological variables. Excellent training device for any young, aspiring God.

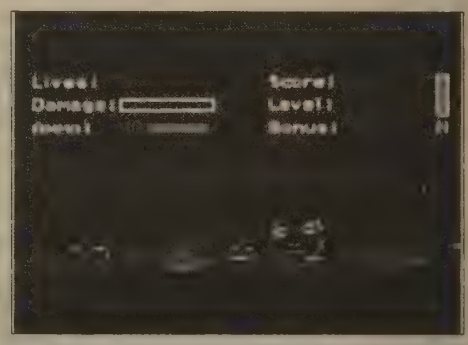
8. Best Computer Implementation of a Classic Board Game

Hoyle Official Book of Games, Vol. 3
Published by: Sierra On-Line
PO Box 485
Coarsegold, CA 93614
1-800-326-6654
For: MS-DOS (640K, VGA/EGA)
List price: $49.95

Backgammon, checkers, dominoes, Parchisi, and "Snakes and Ladders" all in one stylish, colorful package.

9. Best Arcade-Action game

Spectre
Published by: Velocity Development
PO Box 875
Palatine, IL
60078-0875
(708)991-0594
For: Macintosh
List price: $59.95

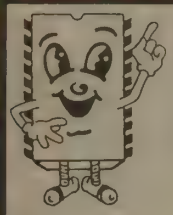


The graphics are simple geometric objects, and the objective is to capture flags defended by robots, but this rather abstract tank game is fast, fun, and flexible. Multiplayer games can be played over a LocalTalk network. The odd angular box is the cleverest package design of the year.

10. Best Sports Simulation

Ultimate Challenge Golf
Published by: Friendly Software
5955 Winslow Road

continued on page 127



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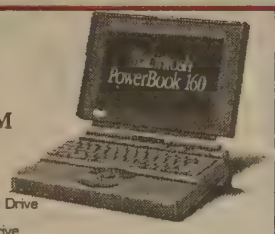

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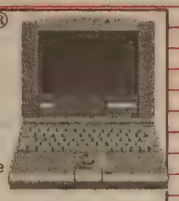

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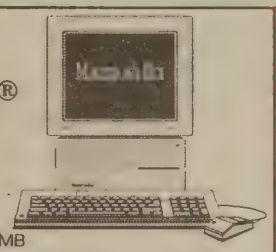

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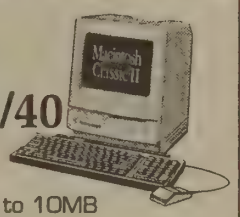

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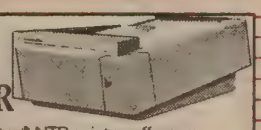

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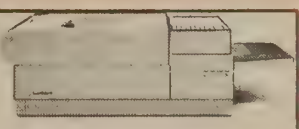

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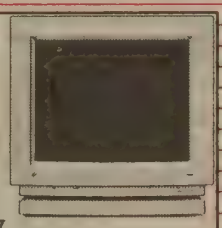

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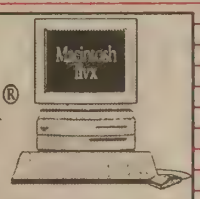

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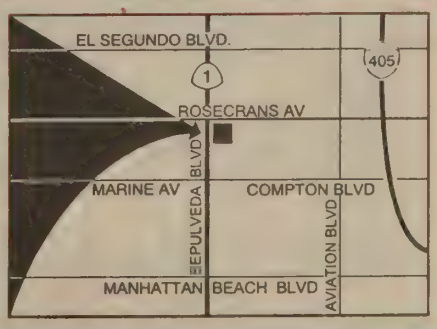

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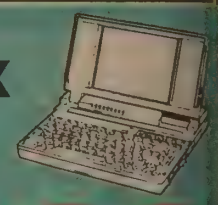

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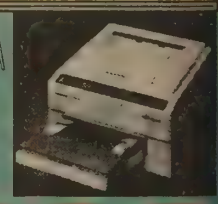

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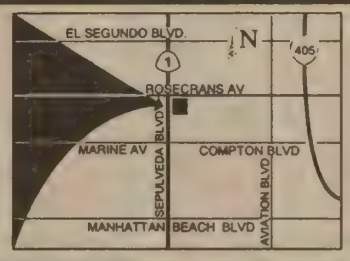

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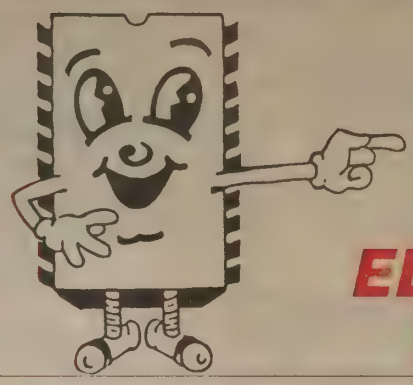

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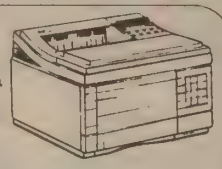

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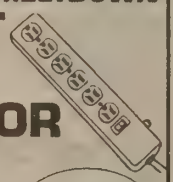

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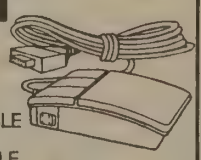

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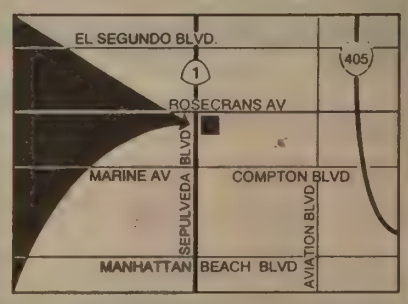

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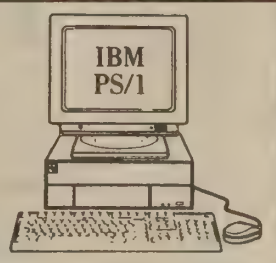

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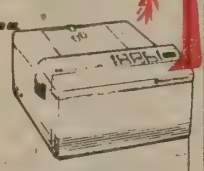

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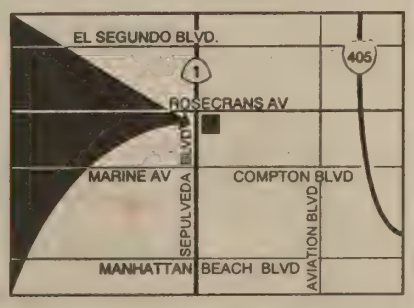

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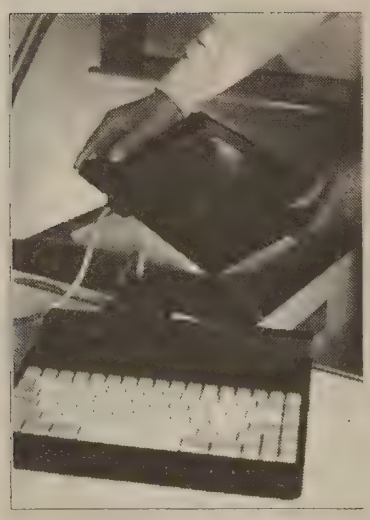
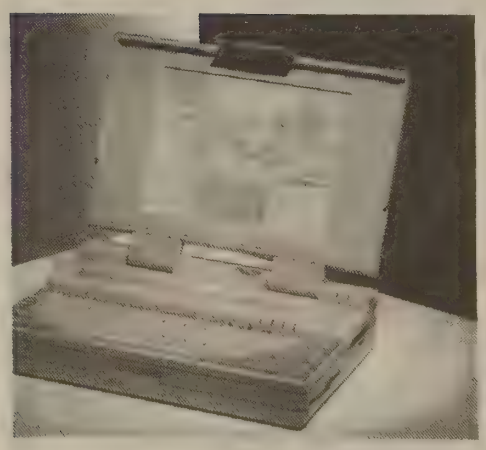


The Wedge ShowBIZ PC Model 325 has a detachable flat panel LCD VGA screen with a removable back cover. Connected via a cable, the screen may be placed on the projection plate of a standard overhead projector. A large, high-resolution image of the PC text or graphics is projected onto a blank wall or screen. Its removable hard drive, of 60, 80, or 120MB capacity, lets you easily switch between operating systems on the same notebook, such as DOS, UNIX, Windows, and OS/2. The ShowBIZ PC uses a 386-25SL processor with 2MB to 8MB of RAM, a built-in trackball, coprocessor socket, and 3.5" 1.44MB floppy drive. A built-in send/receive fax modem, credit card-type security system, and docking panel are available options. ($2999) Wedge Technology, Inc., 1657 McCandless Dr., Milpitas, CA 95035. (408)263-9888.

SAGER NP-209 NOTEBOOK



The NP-209 is a fast, powerful, 486DX2/50, ISA compatible notebook. It comes standard with 4MB of RAM, expandable to 16MB, a 120MB hard drive, 3.5" 1.44MB floppy drive, two serial and one parallel port, a 15-pin extended video port, ports for an optional external numeric keypad, a full-size keyboard connector, and an AT-Bus docking station. Its rechargeable NiCad battery pack requires less than two hours to recharge and lasts for more than two hours when fully charged. The NP-209 ships with MS-DOS 5.0 and Windows 3.1 installed, a deluxe carrying case, and notebook utility software that simplifies power consumption management. Sager, Inc., 18005 Courtney Ct., City of Industry, CA 91748. (818)964-8682.

BOOKS

A GUIDE TO SYBASE AND SQL SERVER

A Guide to Sybase and SQL Server, by David McGoveran

Continued

PRODUCT UPDATES

- **Alias Research** released **Alias Sketch! 5.1**, the latest release of its free-form 3-D illustration and design software for the Macintosh. The upgrade is available for $25. Alias Research, Inc., 110 Richmond St. E., Toronto, Canada M5C 1P1.-1-800-447-2542.
- **Alida** introduced **GT Backup Release 4.0**, its network-based backup, restore, and tape management system designed to run under Solaris 2.0 on SPARC systems and HP platforms. Alida, Inc., 27 McDermit Place, Bergenfield, NJ 07621. 1-800-883-GURU.
- **Brøderbund** released **MacGlobe 1.3**, an electronic atlas that provides instant access to datalike maps and extensive data for 208 countries throughout the world. The upgrade is $25. Brøderbund Software, Inc., 500 Redwood Blvd., PO Box 6121, Novato, CA 94948-6121. (415)382-4400.
- **DataViz** released **MacLinkPlus/PC Version 7 upgrade kit**. DataViz, Inc., 55 Corporate Dr., Trumbull, CT 06611. (203)268-0030.
- **Hayes Microcomputer Products** announced **Version 3.4 of Smartcom II for the Macintosh**. It provides the same capabilities of v3.3, but features full language capabilities for French, German, and English, and adds support for Minitel terminal emulation for use with Videotex color graphics services. Users can upgrade to v3.4 for $35. Hayes Microcomputer Products, Inc., PO Box 105203, Atlanta, GA 30348-5203. (405)840-9200.
- **Hewlett-Packard** is shipping **HP New Wave 4.1**, the easy-to-use desktop manager for Windows. Registered users of any version of HP New Wave may upgrade directly from HP for $49. Hewlett-Packard Co., PC Software Division, MS72UH, 974 E. Arques Ave., Sunnyvale, CA 94086. 1-800-554-1305.
- **Microsoft** released **Works 3.0 for the Macintosh**. Current users of Microsoft Works v1.x and 2.0 can upgrade to v3.0 for $79. Microsoft Corp., One Microsoft Way, Redmond, WA 98052-6399. (206)882-8080.
- **Pastel Development** released **DayMaker 2.0**, a major upgrade to its personal organization software for the Mac. Pastel Development Corp., 113 Spring St., New York, NY 10021. 1-800-727-6732.
- **Peachtree Software** released **Peachtree Accounting for Macintosh 2.0** (formerly atOnce!). This upgrade adds two new modules, over twenty new reports, and many new features. Peachtree Software, Inc., 1-800-247-3224.
- **PowerUp Software** announced **Express Publisher 3.0 for DOS**, a new version of its popular desktop publishing program. Current users can upgrade to v3.0 by sending the original title page from their users' manual and a check for $34.95 plus appropriate sales tax and $4.95 for shipping and handling. PowerUp Software Corp., 2929 Campus Dr., San Mateo, CA 94403. (415)345-5900.
- **Software Publishing** released **Harvard Graphics 3.05 for DOS**. Registered users of v3.0 can upgrade for a $20 shipping and handling fee. Harvard Graphics 2.3 users can upgrade to v3.05 for $89. Software Publishing Corp., PO Box 54983 Kifer Rd., Santa Clara, CA 95056-0983.
- **WordPerfect** announced a new version of its menu-driven relational database, **DataPerfect 2.3 for DOS**. Registered users of v2.2 can upgrade for $89. Customers with earlier versions can upgrade for $99. WordPerfect, Inc., 1555 N. Technology Way, Orem, UT 84057. 1-800-451-5151.

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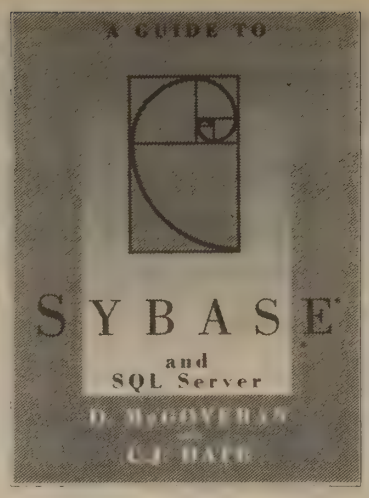

with Chris Date, provides a convenient and comprehensive overview of the Sybase SQL Server and other components of the Sybase system. The Sybase system is a client/server-based relational database management system (RDBMS) for online, enterprise-wide applications. Emphasis throughout the book is on the user—with thorough treatment of user-oriented material, such as the SQL language. The book covers the current releases of the Sybase SQL Server 4.8 product; the Sybase SQL Toolset, including APT Workbench and Data Workbench; and preliminary information on Release 5.1 of the Sybase SQL Server. ($48.50) Addison-Wesley Publishing, Computer Science Marketing Dept., 1 Jacob Way, Reading, MA 01867-9984. (617)944-3700.

SILICON MIRAGE: THE ART AND SCIENCE OF VIRTUAL REALITY

Silicon Mirage, by Steven Aukstakalnis and David Blater, presents an easy-to-read, yet thorough exploration of the underlying technologies, applications, and human ramifications of virtual reality. In a heavily illustrated format, the book covers the full spectrum of this new field. The first four chapters provide the reader with details of such topics as human perception, the design of current head-mounted displays, and 3-D sound. The seven middle chapters look at existing end-user applications of virtual reality in a variety of industries, including entertainment, education, medicine, and aerospace. The final chapters explore the impact and future of virtual reality, including social considerations. ($19.95) Peachpit Press, Inc., 2414 Sixth St., Berkeley, CA 94710. (510)548-4393.

MICROCOMPUTERS: A CHECKLIST OF SECURITY AND RECOVERY CONSIDERATIONS

This new and revised edition of *Microcomputers: A Checklist of Security and Recovery Considerations* can be used as a tool to review and evaluate security and maintenance procedures for microcomputers. It provides concise discussions and a series of lists covering security of equipment and electronic communications, access control, anti-virus measures, computer power protection, contingency planning, maintenance, documentation, and application backup. ($5) Assets Protection Publishing, PO Box 5323, Madison, WI 53705-0323. (602)271-6768.

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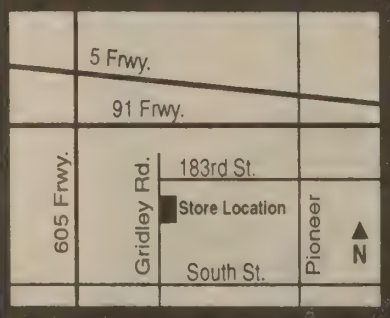

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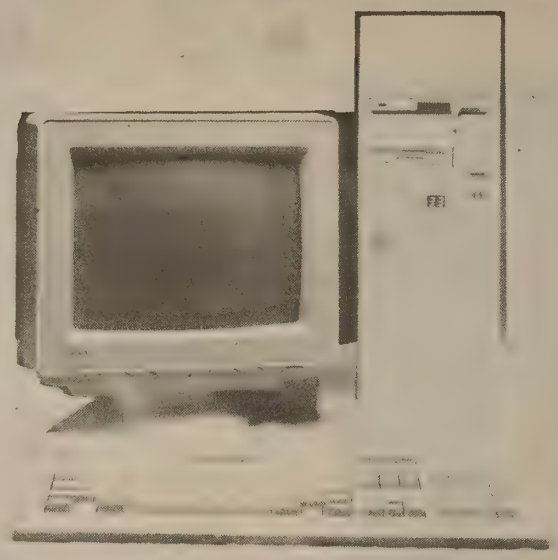

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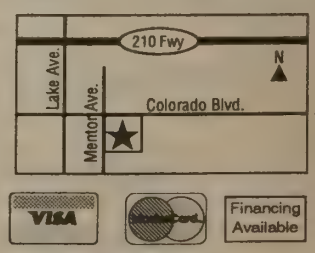

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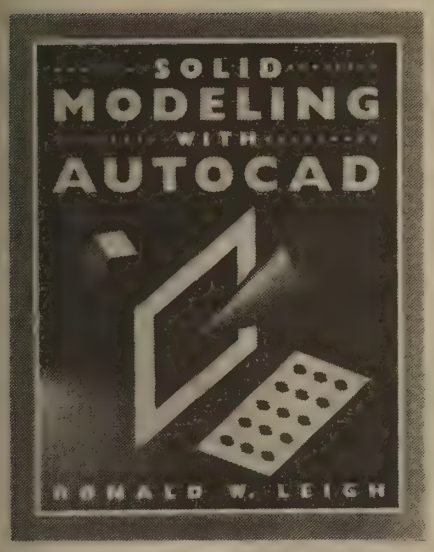


Second Edition, by veteran AutoCAD author Ronald W. Leigh. This new edition explores in depth the streamlined commands in the Release 12 version of Autodesk's 3-D toolkit, Advance Modeling Extension (AME) v2.1. Newly compiled for a 32-bit format, AME v2.1 features clearer pictures, an enlarged drawing size, ease of use, and speed, bringing it in line with 486 PCs. This easy-to-read volume enables design professionals to exploit the improvements in AME v2.1 to create vivid 3-D models with simple 3-D shapes. ($29.95) Ventana Press, PO Box 2468, Chapel Hill, NC 27515. (919)942-0220.

REVIEWS

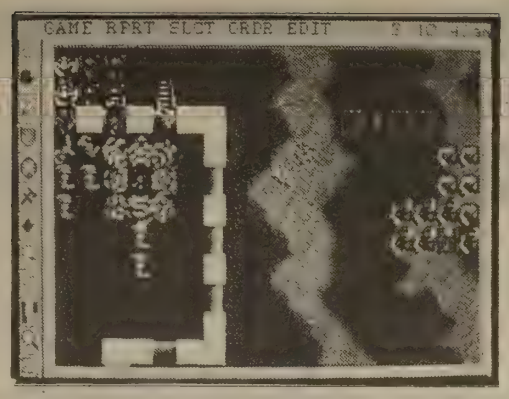
GAME REVIEWS

By Mike Markowitz

SIEGE

Programmed By: Patrick E. Hughes and Larry Froistad
Published By: Mindcraft
Distributed By: Electronic Arts
For: MS-DOS (640K, 12MHz, 80286 or faster CPU, VGA graphics, supports AdLib or Sound Blaster audio cards, mouse required), Amiga version also available
List Price: $59.95

For much of recorded history, the attack and defense of fortified places has been a basic part of the art of war. In the literature of



dragons, sorcery, and fantasy, besieged castles are a standard theme. If you have ever felt a burning desire to pour boiling oil down on a squad of swinish ruffians as they swarm up a ladder, Siege, from Mindcraft, will delight you.

The game lets you attack or defend a variety of intricately designed castles. Your troops may include peasants, knights, elves, wizards, trolls, goblins, and spiders. You can use battering rams, scaling ladders, and catapults (siegecraft mavens may be disappointed by the lack of any options for catapulting plague-infected carcasses or severed heads of prisoners over the walls to demoralize the defenders). There is also no provision for tunneling, which was a major part of siege warfare.

The action takes place in real time, but you can vary the speed or pause the game when things get too intense. The user interface is excellent, with icon buttons and keyboard shortcuts for most commands. You can easily scroll around the battlefield and zoom in for close-ups. You designate areas to attack and defend by dragging a rectangle with the mouse. Swordsmen engage in hand-to-hand combat against enemy troops, while archers and catapults fire at designated target zones. You have to be careful not to shoot at your own men. The game's graphics appear to have been ported over from the Amiga version; the "calligraphic" typeface is too jaggy and hard to read.

Although Siege demands a minimun of 590K of free RAM, you need 2MB of RAM to enjoy all the sound effects. The game's 147 files occupy about 5.5MB of disk space after installation. A charmingly illustrated 60-page user manual provides a brief tutorial, thorough explanations of the game's many functions, and some background on the fantasy world in which the action unfolds.

Graphics and Animation: 7
Sound: 8
User Interface: 8
Overall Value: 7

Mindscape maintains an online bulletin board (310/320-5196) and user support forums on CompuServe and GEnie. (Mindscape, Inc., 2291 205th St., Ste. 201, Torrance, CA 90501. 310/320-5215)

SIMLIFE: THE GENETIC PLAYGROUND

Designed By: Ken Karakotsios
Published By: Maxis
For: Macintosh (2MB for monochrome, 2.5MB for color, System 7 compatible, but requires more memory), MS-DOS version to be released early in 1993
List Price: $69.95

A recent article in *Scientific American* addressed the difficulty of estimating the number of living species on Earth. It's pretty much impossible, because so many of them are microscopic, or live underground, in the ocean depths, or in remote Third-World areas which Western field biologists are staying away from. We do know that the Creator was fond of beetles; there are over sixty thousand variations of the basic model. If you're ready to try your hand at being Creator, SimLife may be just the package you've been looking for.

SimLife is a "software toy" for exploring the dynamics of evolution and ecology in a simplified artificial world. It represents a further elaboration of the ideas embodied in Maxis' SimEarth, released last year. SimEarth focused on the geophysical environment; with a limited set of living organisms that followed fixed evolutionary paths. In SimLife the species are modeled in much greater detail, with various "genetic algorithms" that shape their behavior and enable them to evolve in unpredictable ways.

You can create worlds ranging from "tiny" to "large," but the manual warns that a large

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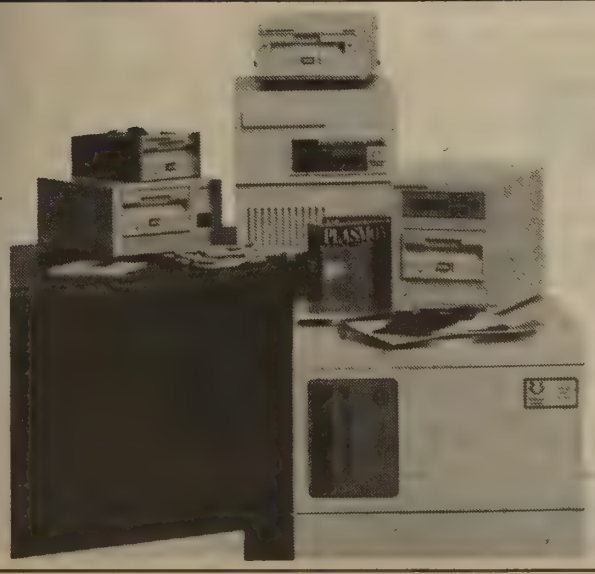

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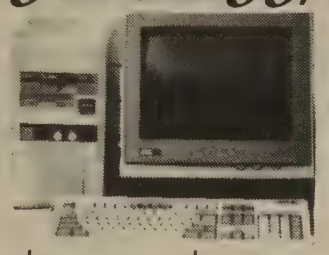

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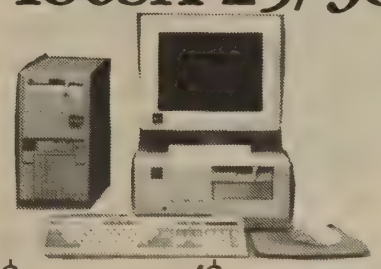

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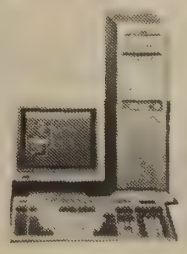

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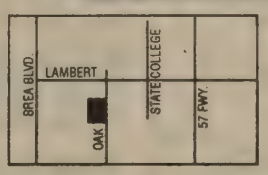

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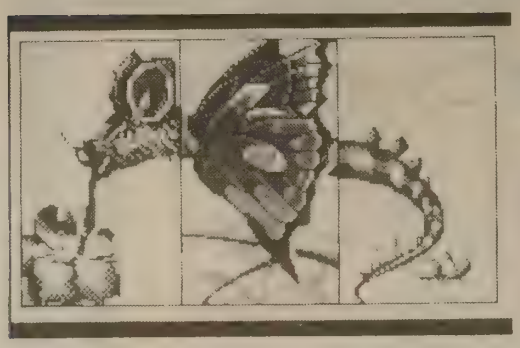

world needs a fast machine with a lot of memory and storage. A saved game file can be huge: 2MB or more.

There is extensive online help and a well-designed interactive tutorial that leads you though the program's many features. The user interface, with multiple floating palettes and overlapping windows, begs for a big screen; I found the 12" color monitor on a Mac LC much too constricting to fully enjoy SimLife. The color version runs in 16-color mode, but the graphic design is so good that this is not a limitation.

Graphics and Animation:	8
Sound:	6
User Interface:	8
Overall Value:	9

The program is installed from compressed files on an 800K disk. There are separate color and monochrome versions, plus a disk of files common to both versions. After installation, the color version occupies 1.6MB of disk space. The 208-page softcover manual is thoroughly illustrated with screen shots and written with a charming sense of humor. This program would be an excellent instructional tool for classes in biology or environmental studies in schools where the teaching of evolution is still permitted. (Maxis, 2 Theatre Sq., #230, Orinda, CA 94563-3346. 510/254-9700)

ZOOKEEPER

Programmed By: Larene Wade Spitler
Published By: Davidson
For: MS-DOS (640K RAM, 8MB hard disk space, 12MHz 286 or faster CPU, VGA graphics and mouse required, most audio cards supported)
List Price: $59.95

Designed for ages 6–11, Zookeeper can be enjoyed by anyone who appreciates animals. The program is a learning adventure, set in a zoo that is threatened by cartoon villains: Greedy Gert, Brain Drain, Meaniac, and Stir Crazy. They drop litter everywhere, scatter the wrong food and plants in the animals' habitats, and mess up the temperature and humidity settings. Your job is to set things right, assisted by Zoonie the Robot, a walking encyclopedia of zoology, and guided by Funk E. Monkey, the coolest primate on a skateboard.

The Zoo consists of eight habitat zones: Desert, Rain Forest, Mountain, Forest and Woodlands, Grasslands, Polar, Oceans, and Rivers. With each area you can find a

particular animal by following its footprints. Each habitat uses a digitized photograph as a background for smoothly animated computer graphics. Click on the binoculars at the side of the screen and the program displays a high-resolution close-up photograph of the animal. Click on Zoonie's globe and the screen becomes a world map showing the animal's geographic range.

Sometimes a path leads you to a memorial to an extinct animal. You receive clues about a particular animal that is currently being victimized by a villain. If you go to the right place, the bad guy is apprehended and placed in Zoo Detention. When you round up

Continued on page 102

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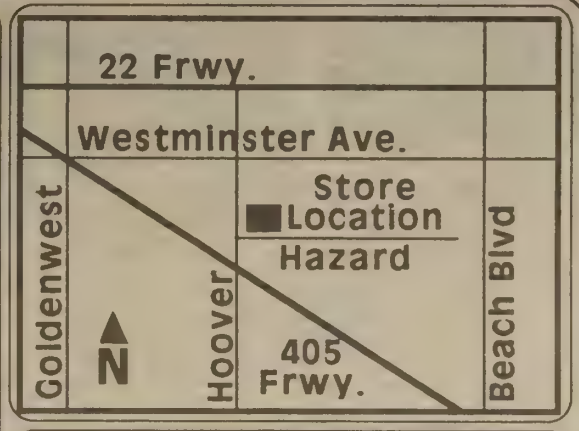

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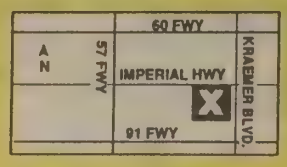

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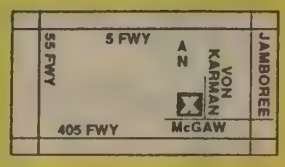

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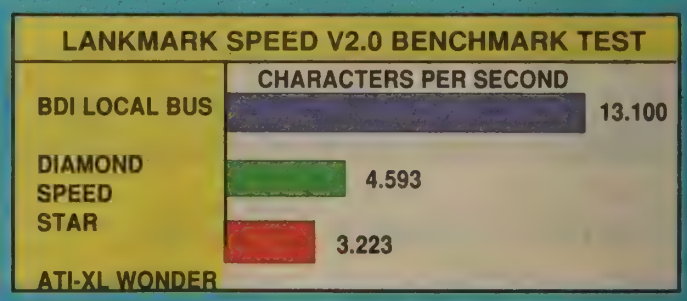

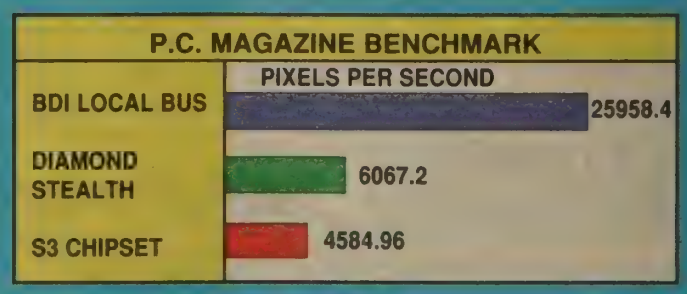

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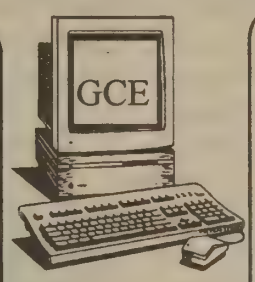

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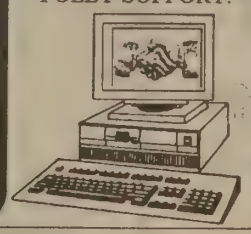

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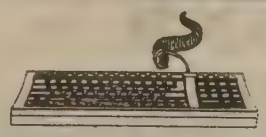

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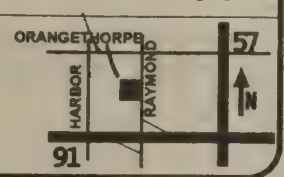

Continued from page 96

all the bad guys, a zoo animal is released back into the wilderness, and you advance one level. The levels range from "Cage Cleaner" to "Head Zookeeper," and the clues become harder as you advance.

There are over fifty animals in the program, including many endangered species; the selection is biased toward everyone's favorite large mammals. The program reflects the changing role of the Zoo, as a last refuge for the preservation of threatened species, rather than an exhibition of live captured trophies. Teachers might wish for a little more information density in the program, but Zookeeper manages to deliver some fairly complex ideas along with the fun. Young users should develop a good understanding of the way temperature, moisture, food, and vegetation fit together to make up an animal's habitat.

Graphics and Animation: 9
Sound: 8
User Interface: 9
Overall Value: 8

The program is installed from ten 3.5" disks (high-density 5.25" disks are also available.)

Zookeeper was developed with the advice of *Zoolife* magazine and Jack Hanna, director of the Columbus Zoo and TV personality (seen frequently with exotic creatures on the Dave Letterman show). (Davidson and Associates, Inc., 19840 Pioneer Ave., Torrance, CA 90503. 310/793-0600)

AMIGA SOFTWARE

AMI-BACK 2.0

Published By: Moonlighter Software Development, Inc.
List Price: $79.95
Reviewed By: Douglas J. Nakakihara

Ami-Back 2.0 is an impressive hard disk backup utility, which supports backups to floppy disks, hard drives, removable media, and tape devices. Since you can also back up to an AmigaDOS file, any standard Amiga storage device can be used. You can even append multiple backups to a single tape. This allows full utilization of a tape's capacity rather than requiring a different tape for each backup.

Ami-Back also supports multiple device backups, which is extremely convenient if you have more than one partition on your hard disk. However, make sure the devices are listed in the same order in the backup and restore configurations. A variety of methods are provided for selecting the files to be backed up, if a full backup of all files is not desired.

To minimize backup storage requirements, Ami-Back features "smart" compression, which decides on the fly if files are worth compressing before doing so. For example, files that have already been compressed don't usually compress further. This can save a lot of time if your hard drive contains a lot of pre-compressed files.

Ami-Back features Image backups for backing up non-AmigaDOS partitions like an AMAX or MS-DOS partition. A special 911-Recovery mode is also available to help in instances where you have problems reading a hard drive conventionally. Ami-Back is exceptionally fast and offers online help, AREXX support, and a host of other features. A scheduler program is included for unattended backups. (Moonlighter Software Development, Inc., 3208-C E. Colonial Dr., Suite 204, Orlando, FL 32803. 407/384-9484)

QUARTERBACK 5.0

Published By: Central Coast Software
List Price: $75
Reviewed By: Douglas J. Nakakihara

Central Coast Software's hard disk backup program, Quarterback 5.0, is packed with features, including one of the best looking interfaces around. Quarterback offers backup to floppy disks, hard drives, removable media, and tape devices. It can also backup to an AmigaDOS file. In addition to being able to select from a list of mounted devices for your source, you can assign additional directories.

Quarterback features adjustable compression. Though this option will reduce your backup storage requirements, it dramatically slows down the backup process. Higher compression settings require more available memory.

Quarterback features a multitude of ways to tag files for backup based upon several criteria. One method is pattern matching, where you can tag or untag files using standard AmigaDOS "wildcards" (e.g., #? and ?). These pattern lists can be saved and loaded, making Quarterback extremely versatile. The program also gives you control over its I/O buffers used for tape and removable (non-floppy) disk backups.

If you are using Workbench 2.0, Quarterback offers several additional features, like a 2.0 Workbench AppIcon. You can drag a Settings file onto the icon to set Quarterback configurations. You can also load a catalog file for restoring files or a disk/drawer icon for backing up in this manner. Quarterback also supports AREXX. Slow compression-backups and lack of multiple device backups are the only notable shortcomings of this otherwise-solid perennial favorite. (Central Coast Software, Inc., 206 Wild Basin Rd., Ste. 109, Austin, TX 78746. 512/328-6650)

PC SOFTWARE

DASHBOARD

Published By: Hewlett-Packard
List Price: $99
Reviewed By: Woody Liswood

Every Windows shell replacement program for the Program Manager I've tried seems to advertise that it is better than Windows, and makes Windows more Mac-like. All things considered, they only make things different, not better. Using a visual representation of how the "dash" might look if your computer were a car, Dashboard is not only interesting to look at but is more fun and easier to use than the Windows Program Manager.

Dashboard lets you use icons to launch your favorite or most often used programs. It places these buttons across the top of the dash, giving you easy access through a single mouse click.

The Extended Screen Manager presents each application currently open as an icon.

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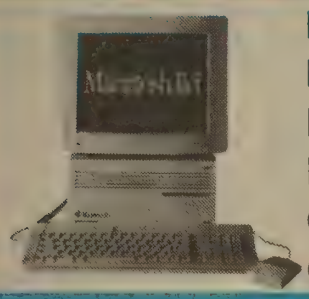

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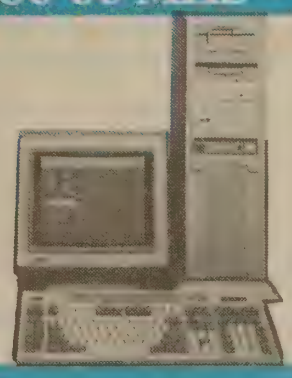

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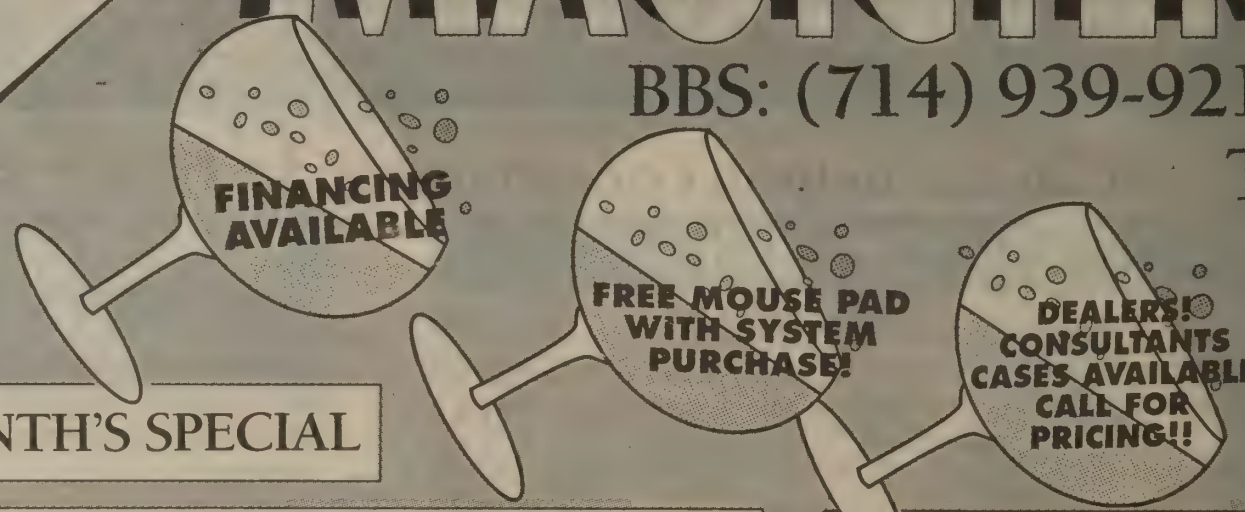

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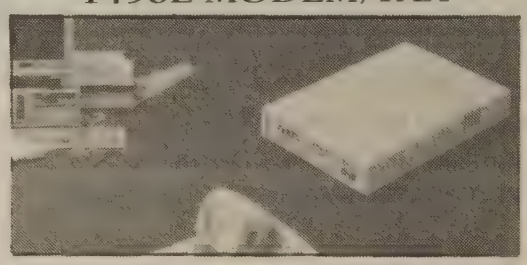

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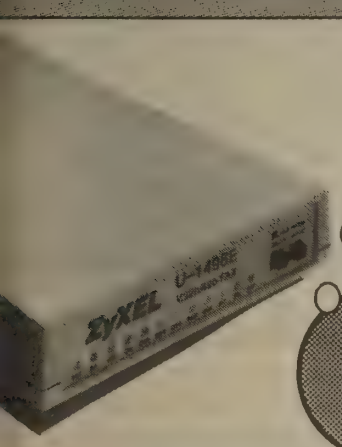

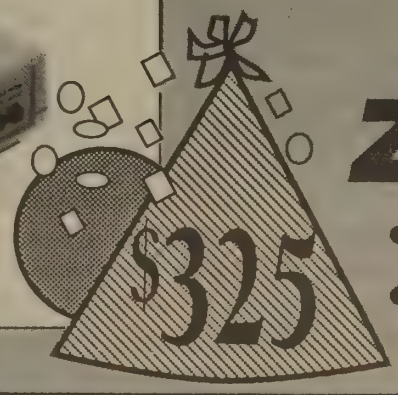

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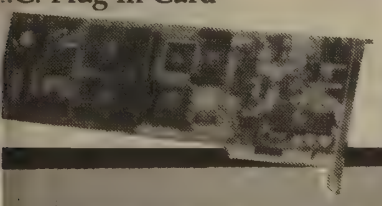

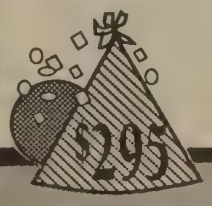

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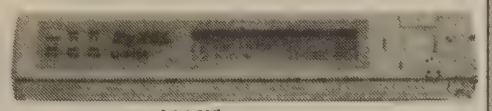

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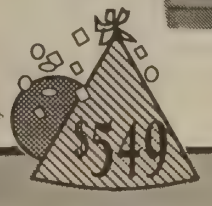

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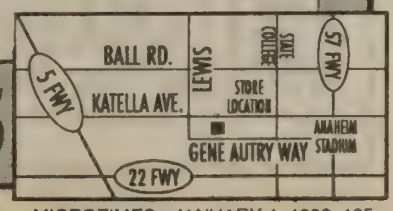
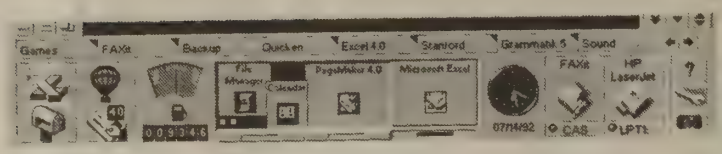


Dashboard and presents information about your system.

The feature I like best is a gas gauge showing the available memory and its usage.



Dashboard also displays a gauge with an arrow and a warning light to tell you when you are about to run out of system resources.

You can create a series of Dashboards, which you can load and use as you need. To ensure a quick reading of the dash, pressing the F12 key brings you Dashboard to the foreground for instant use. Nicely done, HP! (Hewlett-Packard Co., PC Software Division, 974 E. Arques Ave., Sunnyvale, CA 94086. 408/720-4040)

DODOT FOR WINDOWS, VERSION 4

Published By: Halcyon Software
List Price: $189
Reviewed By: Rich Grace

DoDot for Windows is a graphics management and processing program (termed a "graphics toolbox" by Halcyon Software), which offers many features, and places itself squarely in a market crowded by other programs such as Hijaak, Picture Eze, and nearly a dozen other packages. Does DoDot have what it takes to set itself apart? DoDot 4 is a solid competitor, though not a standout, in a tough field. It runs cleanly, and the programs are mature and functional.

DoDot is actually a set of five programs—DoSnap, a handy screen capture program; DoView, a module for viewing graphics files; DoThumbnail, a unique program for cataloging large picture libraries; DoConvert, a graphics conversion program, which handles up to fifty different graphics formats; and the main program, DoDot, which ties all the other programs together and provides some fairly sophisticated image processing capabilities, such as grayscaling color pictures, inverting colors and grayscales to produce photographic negative effects, flipping an entire picture, and scaling pictures from larger to smaller sizes. Operations are relatively slow, but always completed nicely. For speedier operations with large graphics, I'd recommend a minimum of a 486-33 with a fast hard disk and lots of RAM. You may want to turn off Windows SmartDrive as well.

One very nice feature of DoDot's conversion utility is its provision for Windows .RLE files, which are typical Windows bitmap files, shrunk to less than 50% of their conventional size, that can still be used for things like Windows wallpaper. The program also displays and converts Compuserve GIF files very efficiently (more so than programs such as Picture Eze). Things I'd like to see: the ability to Undo multiple levels, and pull-down menus to work with the program during tedious screen redraws (such as Picture Eze does). Also, the selection of conversion filters is OK, but not as great as Picture Eze or Hijaak. Still, DoDot 4 for Windows is a solid package which offers a number of handy utilities for serious graphic artists. (Halcyon Software, Inc., 1590 La Pradera Dr., Campbell, CA 95008. 408/378-9898)

INSIGHT

Designed By: Kahler Communications
Published By: Three-Sixty Pacific
For: MS-DOS (640K, EGA or VGA graphics)
List price: $99.95 (additional Profile disk is $69.95)
Reviewed By: Mike Markowitz

Theories of personality start from the universal observation that there are different kinds of people in the world. Every personality theory (or at least every marketable one) asserts that people can be

Continued on page 117

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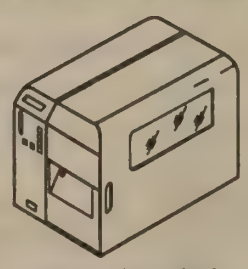

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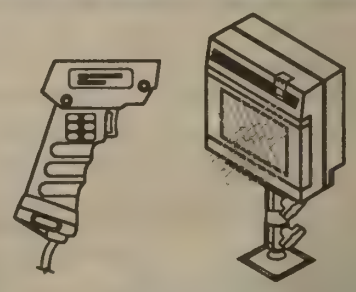

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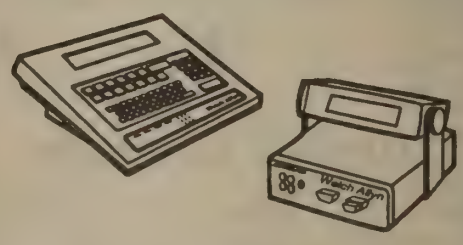

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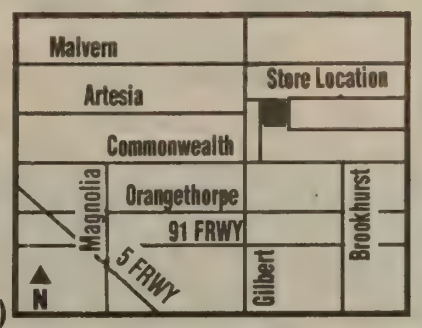

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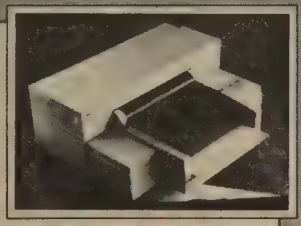

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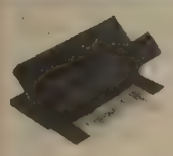

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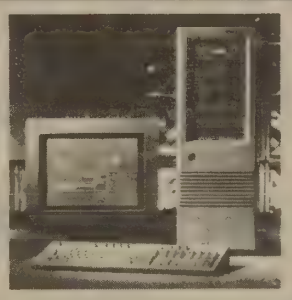

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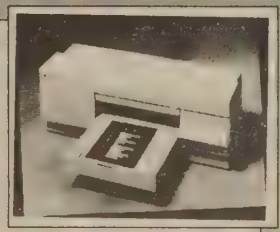

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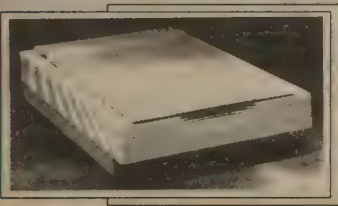

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Passport Producer

A New Entry-Level Approach To Mac Multimedia

BY TONY REVEAUX

RESOURCES:
Passport Producer, $395
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For over ten years, Passport Designs has been renowned for its computer-aided music composition, notation, and MIDI software, mostly for the PC. Now it has added another stanza to its score with Passport Producer, a time-based multimedia integration program for the Macintosh.

Producer is not the be-all and end-all of multimedia. However, it represents a significant step in bringing what we can do on the desktop to the level of the professional world of media production. It is also getting good reports for being an easy-to-use presentation program environment for novices.

WHERE'S THE SMPTE?

"SMPTE" is a set of time code standards for the synchronization of picture and sound, defined and coordinated industry-wide by the Society of Motion Picture and Television Engineers. SMPTE is to film and video producers what PostScript is to graphic designers and publishers. As long as Apple has been providing multimedia solutions, the continuing Mac-complaint I've heard from media producers is "Hey—where's the SMPTE?"

Producer is not a true authoring program, so we aren't quite into the Full Hollywood yet here. It is driven by a linear, rather than a hypertext, continuity. That means that unlike HyperCard or even MacroMind Director, Producer is not intended to be an interactive, random-access solution, but it's the next best thing. It can integrate and coordinate different playback elements that may have been authored in many different media environments. It traffic-cops text; graphics; animation; QuickTime MooVs; and analog, CD, and MIDI audio. These are all translated into cue modules which can then be "cue processed"—cut, pasted, and modified—as columns into a predictable time-based document.

The Cue Sheet is the document. You can choose the time base formula of real time, or the various flavors of SMPTE. Producer does not have device control like Macromedia's MediaMaker, but it can run these cue-based documents in clockwork-smooth presentations and print the file out to video.

RUNNING PRODUCER

Producer will run with System 7 on any 68030-or-higher Macintosh, including PowerBooks and Quadras. Producer uses a default memory partition of 4000K; when using 24-bit color you should make available a minimum of 8MB. Fortunately Producer is portable, and will run on a black-and-white PowerBook with as little as 1500K.

I found using the tutorial a good way to spend an hour or two learning the capabilities of Producer. It includes samples, backgrounds, and both audio and MIDI files. There were several instances where little details seemed to fall through the cracks in the documentation, which slowed me down, but I am impressed by the clarity of the interface. The Cue Sheet—which is somewhat like the Overview in MacroMind Director—is made up of the time and the track columns. It and the three other menu bars, Transport for control (similar to Director's), time Counter, and media modules, are all tear-off menus.

The Stage (as in Director) is the window for all of the visuals. You have to configure the screen position with the Stage Setup window, and then return to the desktop. To get it just where I wanted it took three or four go-rounds, but it's a good approach. It provides you with the Mac's monitor window, which in my case showed the configuration of my two Mirror monitors. Once I'd decided which monitor I wanted the Stage to be on, the Stage position was protected—that is, whatever hectic actions I do with the cursor, the Stage and its contents will not be accidentally moved or deselected.

The ability to expand a presentation up to eight tracks in any combination of media is very important, and not available in any other program with this synchronization.

THE RETURN OF EIGHT-TRACK

With Producer you can have images in layers, with elements that can pop on and off in second-by-second cues. Each of the mod-

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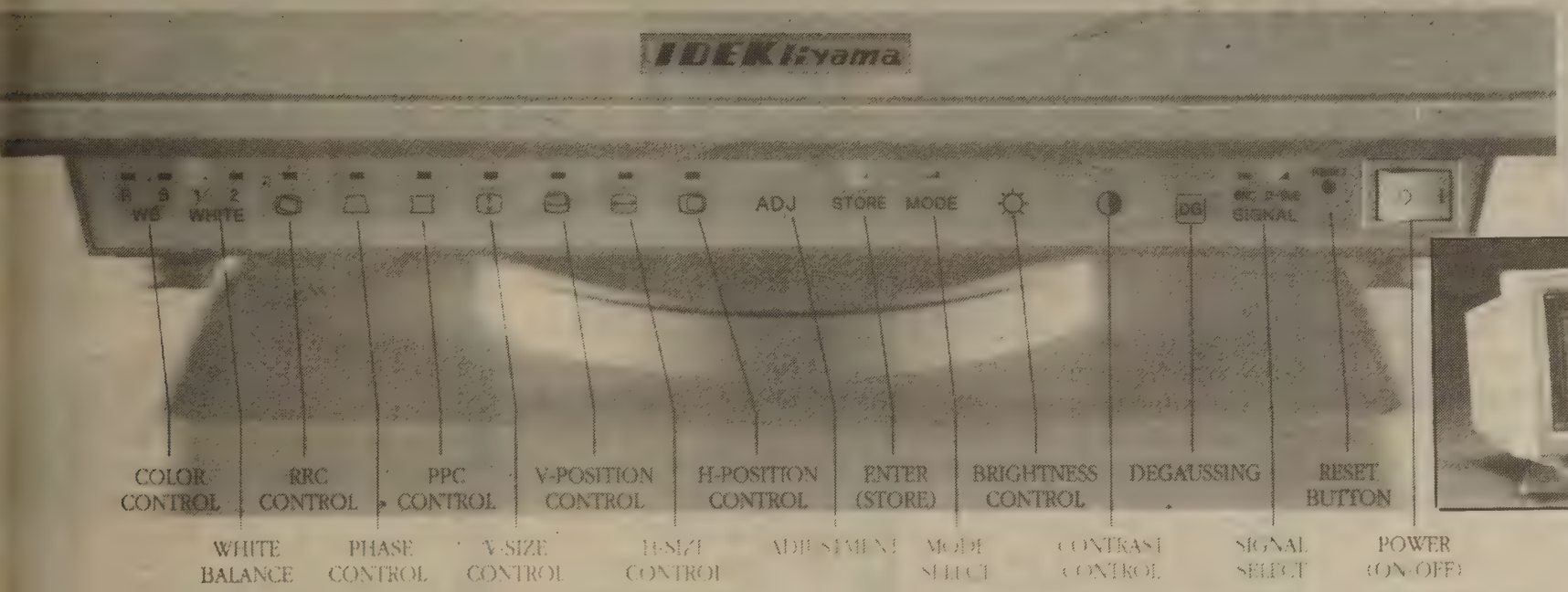
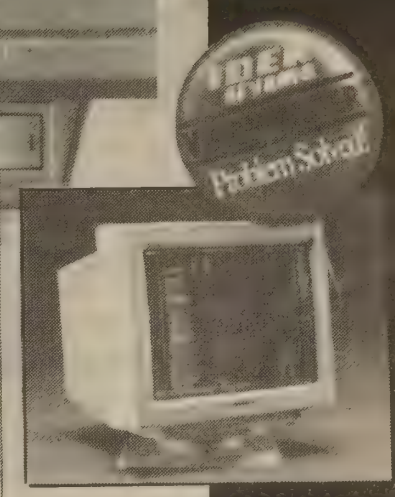
Tony Reveaux, a San Francisco-based consultant, is the editor of Computer Publicity News *and a contributing editor to* Artweek, *and writes the "MediaScan" column in* Film/TapeWorld. *He can be reached via Usenet (luna@well.sf.ca.us) or MCIMail 290-3008.*





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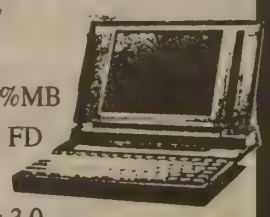

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ules—Slide, Movie, Picture, Animation, Marker, Pause, CD Disc, MIDI, and Audio—includes an internal editor. The transition menu for each of the visual modules provides a long list of effects, such as different blinds, curtains, wipes, and irises. The Audio editor includes a SoundEdit-type of soundwave window. A Record button is included on the Transport bar. Producer will accept input from Macromedia's MacRecorder, but only the most recent version—1.02 or higher. It reads AIFF, but not AIFF/C (compressed digital audio) files.

The MIDI editor is unusully full-featured. It lets you change track volume, work with drum tracks, and change a track's stereo panning, the key of the entire sequence, and the MIDI device map. The Movie editor can select frames for editing, moving frames, and for QuickTime. The slide show editor lets you do the basic things you'd want to do with a presentation program.

The ability to expand a presentation up to eight tracks in any combination of media is very important, and not available in any other program with this synchronization. As with the columns in Microsoft Excel, you can click and drag these tracks to any width, so that you can choose to save space where you need it and then expand other areas to reveal the full cue texts of a more complex track. In fact, Producer can be seen as a kind of multimedia spreadsheet that flows in time on time.

PRODUCER AT WORK

Angel Woodward is the Manager of Document Production of Foxton, Colorado-based Virtuality, Inc., a company that produces virtual reality and computer animation and simulations. "In our multimedia productions," said Woodward, "we will use QuickTime, MacroMind Director, and Passport Producer to create real-time and videotape presentations that will demonstrate our capabilities for our clients. I like Producer because it's very easy to use—I think they did a very good job of designing the interface. It's really easy to move things around—I just click and drag."

Joan Huntley, a beta-tester of Passport Producer, is the director of the Multimedia Computing Studio at the University of Iowa, which provides services to people from all over the campus. It is a predominantly Macintosh-based installation that also includes a Silicon Graphics Indigo and a couple of NeXTs.

In U.I.'s main academic library is a $1.5 million facility called the Information Arcade, with an instructional classroom supported by twenty-four Quadras (eat your heart out, University of California). Huntley administers the Information Arcade for teachers, in disciplines ranging from geology to literature, who use QuickTime files for video and other media sources to assemble multimedia classroom presentations. Producer has taken over in these facilities as the program of choice. "With Producer, these people do not have to be computer science majors; in fact, half of the teachers that work in this facility had never used a Macintosh before," says Huntley.

"We formerly used Macromedia's MediaMaker," she adds, "but I had trouble getting it to work and moving applications from machine to machine. We found that Passport Producer does everything that MediaMaker does, plus many more things. The only place that Producer comes up short in comparison is that MediaMaker has device control, which Producer doesn't yet. We still do a lot of video disk work here on campus, so device control is one thing we would like to see incorporated in Producer."

She cites Producer's ability to control eight tracks of information and its lack of restriction on the kinds of content of each track as stellar accomplishments. "I find it very powerful to be able to have eight different graphic objects, or QuickTime movies, or sound, that you can manipulate on the screen. There's nothing out there that I think will allow you to integrate CD audio and MIDI with visuals as easily as Producer. You can use it as an eight-track sound mixer, or coordinate eight tracks of QuickTime MooVs. You have a much richer set of what you can compose on the screen, and you can define areas of the screen where you can have events happening.

"Director takes a higher learning curve to get up and running," she concludes. "With Producer I can sit someone down and never have to show them the manual. I show them the screen and how it works and they are off and running at a basic level. At a basic level, it's instinctive."

PASSPORT TO THE FUTURE

According to Passport, a future version of Producer—perhaps the next one—will include some device control. That will ultimately include Kaleida Labs' ScriptX technology when it's ready. ScriptX is expected to go well beyond command-based device control like MediaMaker, and even beyond application-specific Apple events. Macromedia has also committed to ScriptX, but thus far only to its core authoring programs, Director and Authorware.

Like MacroMind Director, Producer includes a runtime player. Passport Producer Player can be duplicated and distributed free under a lifetime license as part of the package. Creating a Player document can be as simple as selecting the "Save as Player File" option in the Save dialog box. From the reports thus far, it is likely that the Passport Producer Player icon will become a familiar roadsign on the busy highway of multimedia.■

Joan Huntley, University of Iowa:

"There's nothing out there that I think will allow you to integrate CD audio and MIDI with visuals as easily as Producer. You can use it as an eight-track sound mixer, or coordinate eight tracks of QuickTime MooVs."

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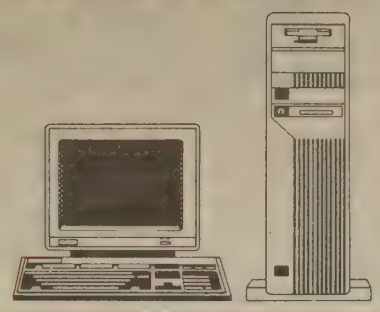

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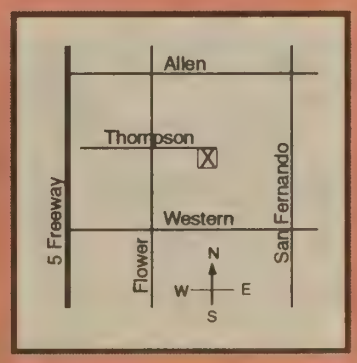

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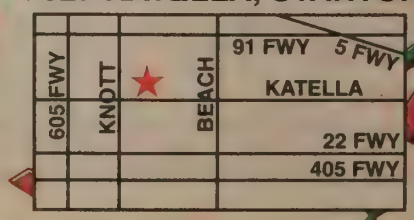

Continued from page 106

reliably classified into a finite set of types, and when we know which type you belong to, we can make useful predictions about your behavior.

Insight is a software package based on the Kahler Process Model, a personality theory developed by Dr. Taibi Kahler over the past twenty years. Dr. Kahler helped to devise the psychiatric screening procedure used by NASA in astronaut selection. The model uses a classification of six basic personality types:

Reactors	(compassionate, sensitive)
Workaholics	(responsible, logical)
Persisters	(dedicated, observant)
Dreamers	(reflective, imaginative)
Rebels	(spontaneous, creative)
Promoters	(resourceful, adaptable)

Every type has its own strengths and weaknesses, and no type is "better" than another. Although one type is always the "base" or dominant theme, people can move through phases where another type comes into play. About 10% of the general population are Persisters, but over 70% of qualified astronauts fit this pattern. This reviewer turns out to be a Dreamer, in a Rebel phase.

The software offers a short, graphic tutorial and then presents a series of twenty-two questions that can be completed in about a half hour. Each question takes the form of a set of statements or alternatives you can rank-order, or leave blank if they do not apply to you. For example:

If my friends or coworkers were to see me as an animal it would be:

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The program can then display or print out a detailed profile; a five-page analysis of the results. You are also invited to develop an Action Plan for greater personal and professional success.

Although the program is not copy protected, it uses an unusual "key disk" scheme that limits the user to two completed Profiles. Additional key disks can be purchased for $69.95. This is cheap, compared to the cost of professional psychological testing, but unacceptably expensive for a mass-market software product.

The 95-page reference manual includes a glossary, several technical papers, and a bibliography on the background and application of the theory. A separate booklet contains installation and operating instructions for the program. The package also includes two audio tape cassettes of lectures by Dr. Kahler.

Three-Sixty Pacific is primarily a game publisher, but its founder, Tom Frisina, was deeply influenced by a Kahler seminar he attended in 1987, "and decided to make the information available to others in the easily accessible computer software format." Additional programs, based on the same theory, but focusing on family and other relationships, are under development. (Three-Sixty Pacific, 2105 S. Bascom, Ste. 165, Campbell, CA 95008. 408/879-9144) ■

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Amiga Animation At Disney

Affordable Technology Offers Advantages Over Traditional Approach

BY DOUGLAS J. NAKAKIHARA

Disney has always been known for top-quality animation. Nearly everyone today has been touched in one way or another by a Disney creation, and we are all familiar with the cast of classic Disney characters. To some of us, they are almost friends.

It seems only fitting that the Amiga, a powerful animation tool, would find a niche at Disney, specifically at the Television Animation arm of Walt Disney Pictures and Television.

In an environment where artists have for decades painstakingly created animation masterpieces by hand, the Amiga is revolutionizing the process. The man behind this revolution, Kelly Day, has managed to convince the powers that be that the Amiga is a practical tool for what has traditionally been—and still is, for the most part—a totally manual process.

For one project, Amiga-using designer Kelly Day had to create Goofy's living room. Once the room was created in the 3-D program, he printed multi-perspective background pictures of the room without ever having to draw it. This saves tremendous amounts of time.

Day has been with Disney for about four years. Although his name may not be familiar to you, his work might—his credits include such movies as *The Rescuers* and *Duck Tales*, as well as the made-for-TV cartoons *Talespin*, *Dark Wing Duck*, and *Goof Troop*. He is currently working on a new animated cartoon series called *Bonkers*.

Day's computer setup consists of an Amiga 3000 with a 1950 multiscan monitor and an Amiga 2500 with a 1084 monitor. Both computers are equipped with Syquest removable media disk drives, IVS's Trumpcard SCSI controller cards, and Ethernet cards. The Amigas are connected to a Novell local area network using the Netware product from OXXI, Inc. Additionally, the two Amigas are networked directly together via the SCSI controllers using the SCSI-SHARE product from IVS. This allows direct file sharing between the two computers. Talk about connectivity!

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TRADITIONAL ANIMATION

To really appreciate the benefits the Amiga provides, it is important to understand how animations are created using the traditional process. Before an animation can be made, a storyboard must be created. A storyboard is a series of black-and-white hand-drawn pictures, called "panels," depicting important moments (also known as key frames) in the animation. The full dialog and other direction notes are written under each panel.

Animations are created assembly-line style; basically three types of people are involved—character, prop, and background designers. The character designers are in charge of "living" objects, and the prop designers cover nonliving objects that move. The background designers draw the static elements in a scene.

For example, if the animation involved a man picking up a stick in a room, the background designer would draw the room, the character designer would draw the man, and the prop designer would draw the stick.

The Disney designers study the storyboard and then draw black-and-white line art pictures called "models." For instance, if one of the main features of the animation was a car character, a designer would draw the car from various perspectives. This gives the actual animators a three-dimensional idea of what the car looks like. One other designer, called the color designer, creates colored models of the characters, props, and backgrounds.

Interestingly, the Disney designers don't draw the final animation, they only provide the "look" of the cartoon. The work the public actually sees is not technically the work of Disney designers. Because a twenty-minute cartoon requires nearly twenty-nine thousand frames to be drawn and painted, this work is usually farmed out to animation studios located in other countries where labor is cheaper. Normally, an army of animators is used to make the final product. These studios are sometimes independent and not related to Disney.

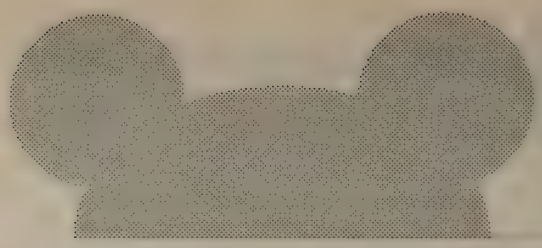
In creating the animation, the animators base it on the key frames in the storyboard. They are only given specific information as to what certain frames should look like, and from that must also create the frames between the key frames. This is sometimes called "tweening." The designers' models provided with the storyboard are used as reference information to help these animators tween.

ANIMATION WITH THE AMIGA

So how does the Amiga fit into all of this?

Day uses a 3-D rendering program to create characters, backgrounds, or props. Once all of the objects are created and properly oriented, he can position the camera and print the model on a laser printer. He can literally print the scene from any perspective by simply changing the camera view! For one project, he had to create Goofy's living room. Once the room was created in the 3-D program, he printed multi-perspective background pictures of the room without ever having to draw it. This saves tremendous amounts of time. The traditional method would require each model to be drawn by hand.

Though Day has used various 3-D rendering programs in the past, he now relies on Playmation from Hash Enterprises.



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Playmation's spline-based objects are ideal for the output needed. All scenes are rendered to high-resolution IFF files.

If you watch cartoons, you'll notice that objects are usually a single color outlined in black. As a result, in contrast to the normal 3-D rendering objective of photo-realism, objects cannot have any shading—they must be a flat, single color. To achieve this, all of the objects are set to reflect 100% of the ambient light. Color selection is also very important, as objects that overlap or are connected must be different colors. Each side of a cube, for example, would have to be a different solid color.

The rendered picture is then run through a program called Trace, a utility included with Gold Disk's Professional Draw, a structured drawing program. Structured drawing programs are used to create high-quality output, usually using a PostScript output device. With PostScript, output quality of structured drawings is determined solely by the capabilities of the output device, and is significantly superior to that of bit-mapped graphics, whose resolution is normally tied to the display resolution and usually contains a lot of jaggies when printed.

Trace turns the picture into a ProDraw clip that's an outline of the original picture. Trace only draws lines where a color changes from one to another, which is one of the reasons it's important not to have any shading. So if you had a red teapot with a blue handle, Trace would separately outline the teapot and handle. If the handle and teapot were the same color, both objects would be outlined, but there would be no separation between the pot and handle.

Once Trace is finished, the clip is loaded into ProDraw for printing on a PostScript printer. This may all seem rather complicated, but since ProDraw finally supports ARexx, Day has written an ARexx script to handle nearly everything. Once all of the frames are rendered, he can trace and print each frame automatically with no human intervention. The final printed product is virtually indistinguishable from its hand-drawn counterpart.

Day is also very proud of being one of the only designers who sometimes includes fully animated frames for tricky sequences. As discussed above, this work is normally done by the animation studio, but any help that he can provide will obviously make for a better final product. Since the scene is already defined in three dimensions, all he has to worry about is the path of the camera and the timing. Playmation has a unique and powerful way of accomplishing this using a time-line metaphor.

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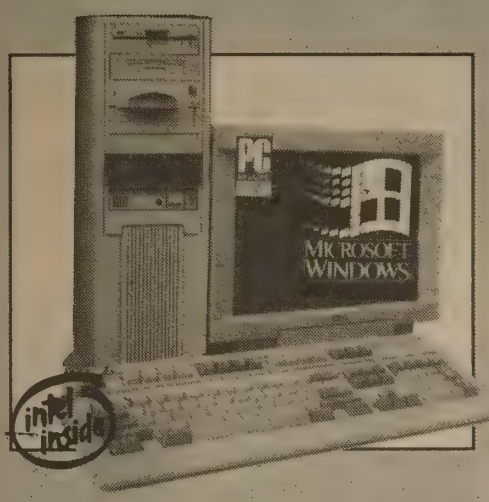

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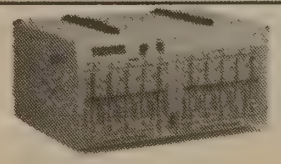

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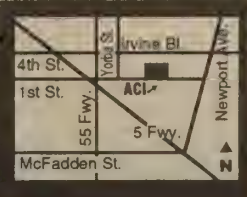
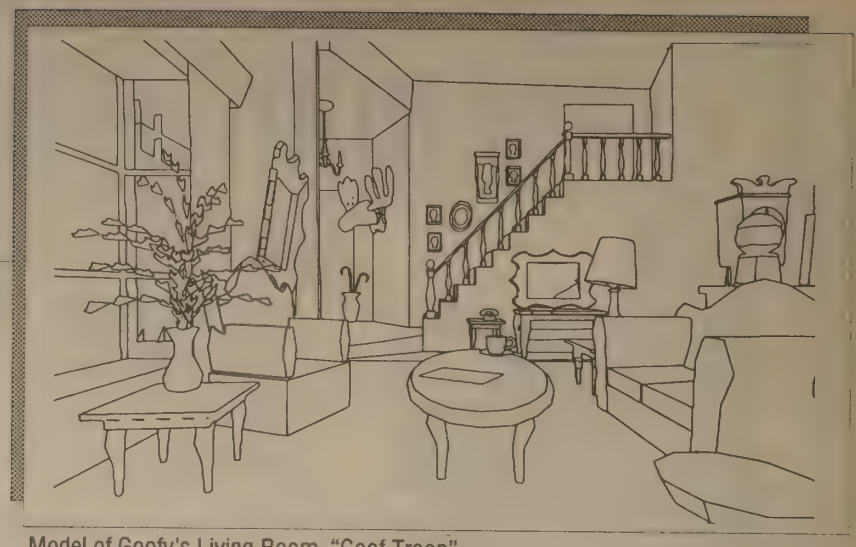


Normally, computer-generated animations are not directly used in cartoon animations.



Model of Goofy's Living Room–"Goof Troop"

When previewing an animation on screen without background, he often draws various references directly on the display screen using a wipe-off marker. This, he says, is much faster than trying to genlock the animation over a background. In other words, it's a quick-and-dirty way to get the job done.

Normally, computer-generated animations are not directly used in cartoon animations. However, a cartoon episode Day worked on showed the characters playing a video game. In this case, the lower, resolution computer output was required. As a result, an actual Amiga-generated animation was mixed into the cartoon.

"ANIMATIC STORYBOARDS"

Day also uses the Amiga to create "animatic storyboards." Normally there are three acts to a twenty-minute cartoon, and the traditional storyboard for each act is several inches thick. Although great effort is made to include as much information as possible in the storyboards, much interpretation is left up to the animation studio as to what the final cartoon should look like. Since each panel in the storyboard represents various amounts of time, it is nonlinear, and the "feel" of the cartoon is absent. The animators are missing the timing of the events, and this can affect the cartoon's humor.

An animatic storyboard is a video of the storyboard synced with the cartoon's soundtrack. This gives the animation studio much more information about what is desired and how events should be timed. The result is related to a slide show with sound commentary at appropriate intervals.

To digitize the soundtrack, Day uses Sunrize Industries' AD1012 12-bit sound board and Studio 16 software. The storyboard pictures are brought into the Amiga using Progressive Peripheral's Framegrabber. Once the sound and pictures have been digitized, the two elements must be synced together.

Gold Disk's Showmaker is used to control when pictures are displayed. However, because he was working with so many frames, Day found that Showmaker's input method was very tedious and time consuming, so he wrote his own customized input program that saves data files in Showmaker format. The program not only shows the SMPTE time

continued on page 127

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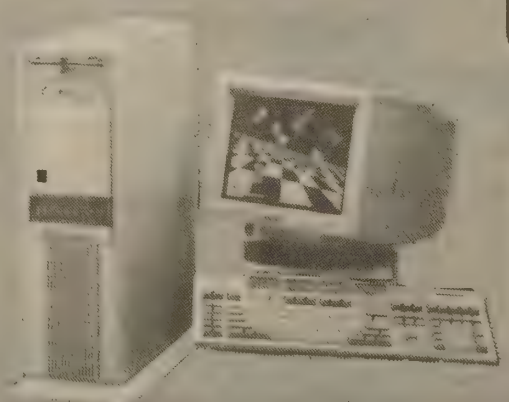

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- VESA LB IDE Controller
- VESA LB Accelerator Video Card
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- Enhanced 101 Keyboard
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Mono 14" Monitor	105
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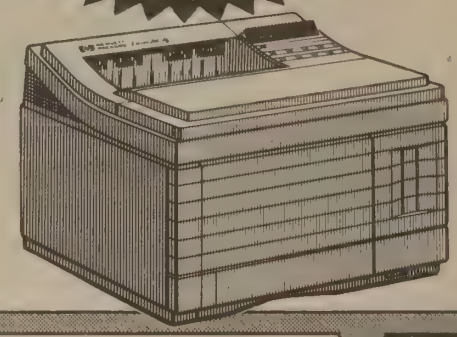

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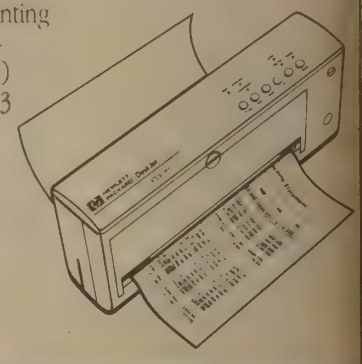

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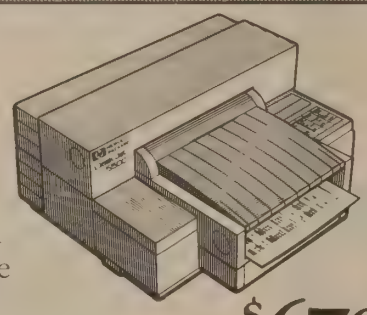

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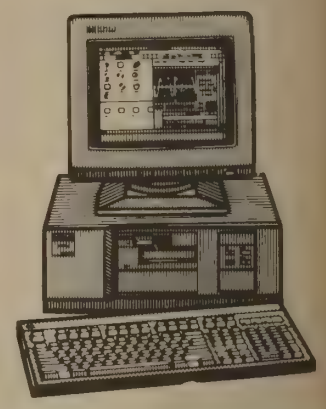

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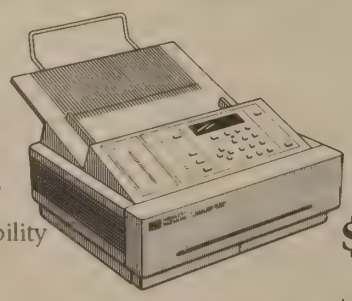

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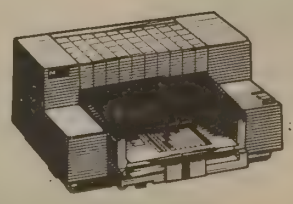

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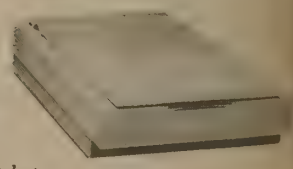

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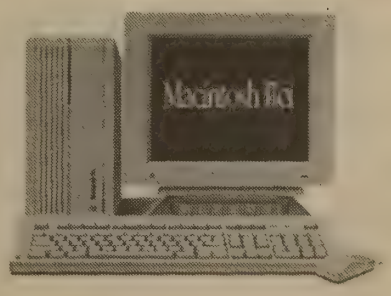

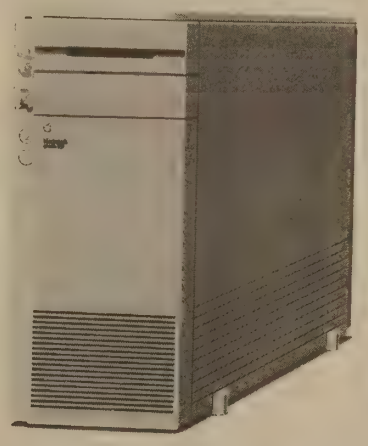

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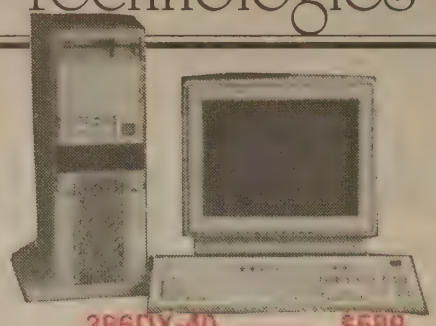

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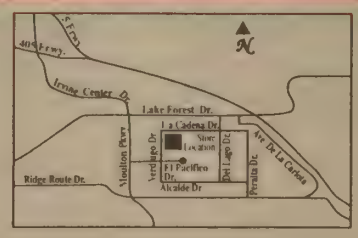

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continued from page 80

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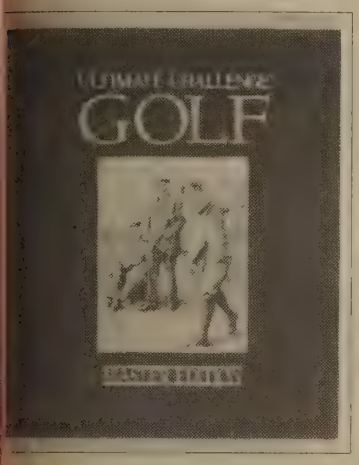


The accuracy, good design and rich variety of options in this game are enough to make you forgive the annoying key disk copy protection.

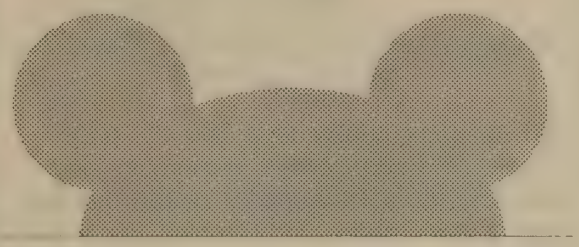
We regret that this year's zero-based budget for the Mikey Awards rules out the gala award banquet and the hand-engraved crystal-and-gold statuettes. In fact, this article is the only notification that the winners may receive, but they can all be proud of their achievements in Gaming Design.

continued from page 122

code, but also the film length in feet, a reference methodology used by many animators.

By multitasking Studio 16 with his own program, Day can view the graphical representation of the soundtrack's soundwave and sync up the frames accordingly. If he needs to know what is happening at a particular point in the soundtrack, he can use the mouse to highlight the portion of the soundwave he wants to hear and play it.

When the storyboard is ready to be recorded, the Amiga 2500 runs Showmaker to display the frames, and Studio 16 on the Amiga 3000 plays the animation soundtrack. The two computers are kept in sync using an independent SMPTE timecode source. The SMPTE signal is fed simultaneously into both Amigas. The AD1012 in the Amiga 3000 has a built-in SMPTE connector; however, on the Amiga 2500, the timing signal must be fed into a MIDI interface, so an external SMPTE-to-MIDI converter box is used. The show is recorded onto videotape in real time.



The work the public actually sees is not technically the work of Disney designers. Normally, an army of animators is used to make the final product.

It is important to note that although Day is using two Amigas, Showmaker and Studio 16 could be multitasked on the the same computer, accomplishing the job using a single Amiga! Moreover, except for the lower sound quality, the Amiga's internal 8-bit sound could also be used in lieu of the 12-bit sound board.

Though the animatic storyboard is not animated per se, it does provide timing and give the sense of movement that the traditional storyboard lacks. This makes the communication between the Disney designers and the animation studio more effective and helps prevent costly mistakes. As most computer users will attest, it is infinitely easier to have someone show you how to do it, rather than having to read the manual.

What's really impressive is that all of Day's hardware and software is off-the-shelf product. When animation companies start realizing the profit potential of Amigas, look out—the flood gates will be opened.■

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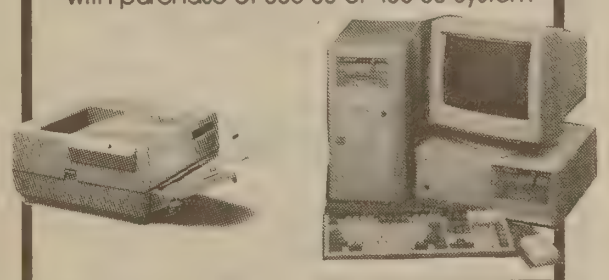

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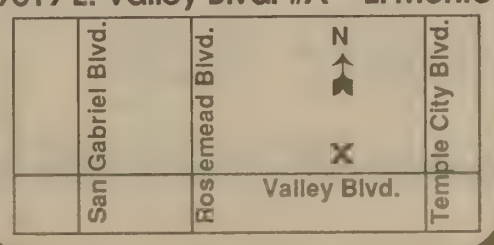

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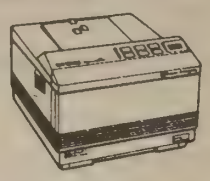

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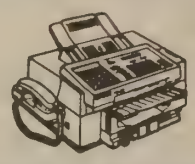

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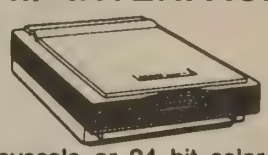

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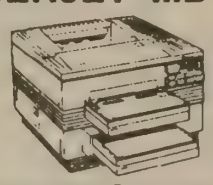

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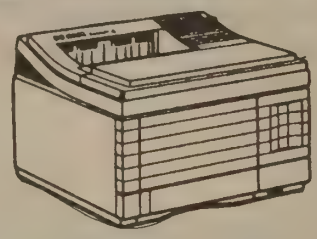

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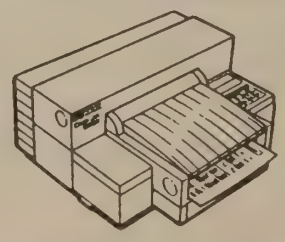

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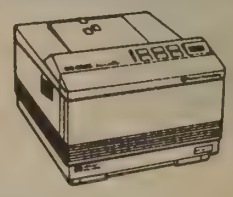

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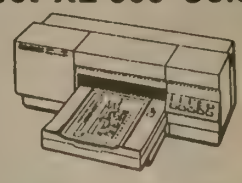

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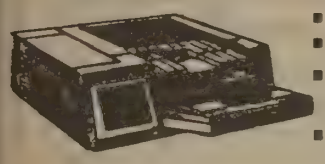

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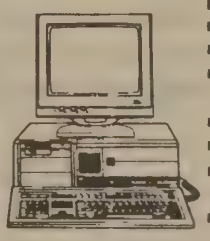

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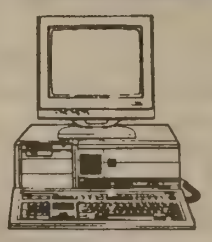

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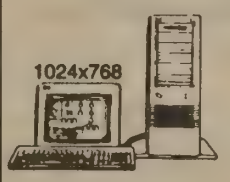

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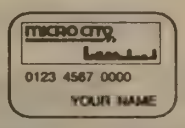

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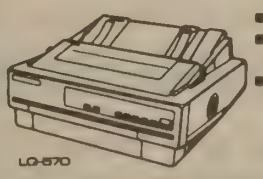

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Calendar Of Events

CALENDAR LISTING CHANGES

Beginning with issue #100, the Calendar listings were reorganized into two sections. The first part includes conferences, shows, and other special events. The second presents classes, seminars, and workshops.

We hope this will help you more easily find the information you are searching for as well as stay informed of the latest events and resources that are available to you.

Thank you,
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CONFERENCES, SHOWS, AND OTHER SPECIAL EVENTS

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January 16 Computer Show & Sale. Anaheim Stadium, indoors. Richard James Corp. Call: 1-800-685-1400.

January 20–22 Windows & OS/2 Conference. San Jose. Miller Freeman. Call (415)905-2200.

January 23–24 Computer Show & Sale. CSUN, North Campus. Richard James Corp. Call: 1-800-685-1400.

January 25–28 Client/Server '93 Conference & Exposition. San Jose. CMP Publications. Call: 1-800-972-5244.

January 25–29 PenExpo Conference. San Francisco. Boston University, Corporate Education Center. Call: (508)649-4200.

January 25–29 USENIX Winter 1993 Technical Conference: The Challenge Of Innovation. San Diego. USENIX. Call: (714)588-8649.

January 26–27 EMA Membership Meeting. Tampa, FL. EMA. Call: (703)875-8620.

January 27 Software Council Of Southern California Networking/Dinner Meeting. Los Angeles. Software Council of Southern California. Call: (310)328-0043.

January 28 Software Council Of Southern California Networking/Dinner Meeting. Woodland Hills. Software Council of Southern California. Call: (310)328-0043.

January 28–30 Technology, Reading & Learning Difficulties Conference. Santa Clara. Educational Computer Conference. Call: (510)222-1249.

January 30 Computer Show. LA Fairgrounds, Pomona. Computer Marketplace. Call: 1-800-800-5600.

FEBRUARY

February 6 Computer Show. Sherman Entertainment Center, Reseda. Computer Marketplace. Call: 1-800-800-5600.

February 6 Computer Show & Sale. Anaheim Stadium, indoors. Richard James Corp. Call: 1-800-685-1400.

February 7 Computer Show. Sequoia Conference Center, Buena Park. Computer Marketplace. Call: 1-800-800-5600.

February 7 Computer Show & Sale. Glendale Civic Auditorium. Richard James Corp. Call: 1-800-685-1400.

February 13 Computer Show & Sale. CSUN, North Campus. Richard James Corp. Call: 1-800-685-1400.

February 14 Computer Show & Sale. Orange County Fairgrounds, Costa Mesa. Richard James Corp. Call: 1-800-685-1400.

February 16–18 mobile93 Conference And Trade Show. San Jose. Technologic Partners. Call: Natalie Paulucci, (212)696-9330.

February 17–18 Graphic Arts '93 Exposition And Conference. Los Angeles. ImPressTech. Call: (415)864-3151.

February 24–26 Orlando Multimedia '93: 11th Annual Conference On Interactive Instruction Delivery. Kissimmee, FL. Society for Applied Learning Technology. Call: 1-800-457-6812.

JANUARY 9–10

Computer Show

Pomona

Computer Marketplace computer shows feature over three hundred exhibits with thousands of products. They are now featuring seminars open to all users—from the beginner to the advanced computer user. Admission is $6.00 and shows are from 10:00 am to 5:00 pm. Los Angeles County Fairgrounds (Fairplex), Pomona. Call: 1-800-800-5600.

C-TUG, Commodore Computer Owners

Adds second meeting each month for helping seniors

C-TUG is now co-sponsored by the Orange Senior Citizen Center to expand its efforts of helping senior citizens. Because they were unable to help some people due to having meetings on Sunday afternoons, they have added a second meeting each month. Meetings are now held on the fourth Sunday and second Thursday. For more information, call: Louis Palush, (714)532-1802.

JANUARY 23–24

California Computer Show & Sale

California State University Northridge, North Campus

The Richard James Corp. Glendale Computer Show & Sale, at CSUN January 23–24, is the first two-day computer show in the San Fernando Valley. The show will feature software, computer books, IBM compatible hardware, and many other computer products and accessories from dealers, direct importers, and manufacturers. Admission is $6.00 and shows run from 10 am–4 pm. Call: 1-800-685-1400.

CLASSES, SEMINARS, AND WORKSHOPS

JANUARY

January 19–20 How To Design & Publish Effective Newsletters Seminar. San Diego. San Diego State University, Extended Studies. Call: (619)594-5669.

MARCH

March 15–17 Virtual Interface Technology Course. Los Angeles. UCLA Extension. Call: (310)825-1047.

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POMONA - L.A. County Fairgrounds (Fairplex)
Exit Highway 10 at Fairplex Drive. Go North to Mckinley, turn right. Turn Left on White Avenue to Gate 14.

January 30
Saturday
POMONA - L.A. County Fairgrounds (Fairplex)

February 6
Saturday
RESEDA - Sherman Entertainment Center
From 101 Freeway, take Reseda off ramp, turn left (if traveling East) on Reseda Blvd. to Sherman Way, turn right, one block to Canby Street. 18430 Sherman Way.

February 7
Sunday
BUENA PARK - Sequoia Conference Center
Take the Beach Blvd. Exit off the 91 Freeway, go one block North to 7530 Orangethorpe.

February 20 & 21
Saturday & Sunday
POMONA - L.A. County Fairgrounds (Fairplex)

POMONA SEMINARS

Windows 3.1
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Barter Exchange. (213)871-1304, (805)373-3871, (818)999-1829, (818)879-8547, (818)787-6408. Alternative age 21 and over multiline BBS, adult themes, library, and GIFs. Thurs. nights are for TBE. [Exp. #104.]

Blazin' Bytes BBS. (310)641-4678, (818)776-2784. 8-N-1. Sixteen lines, chat, email, games, sixty pubs/SIGs, great library. Free month. Sysop: Blazin' Barb. [Exp. #104.]

Crystal Palace. (310)472-2598, (818)765-2171. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. 15GB of GIFs, stories and shareware on CD-ROM, netmail, active msg database, matchmaker, doors, games. Sysop: Daniel Mathis. [Exp. #106.]

FREE-ACCESS

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Entertainment & Consumers Network. (310)204-6007, (818)784-3039, 888-3942_8-N-1, 24 hrs., 300/1200/2400. Over fifty consumer and business services available with free trial membership. [Exp. #106.]

Infinite Wisdom North. (213)664-4231, (818)951-2796, 951-6097. 8-N-1, 24 hrs., 1200/2400. Educational science, engineering, online games, doors, chat, offline mail reads. Free trial account. Sysop: Tom Honles. [Exp. #106.]

KBBS Los Angeles. (310)558-0145, (310)532-1700 (818)989-3875. 8-N-1, 300/1200/2400/9600. LA's busiest, with 32,000 channel chat, 13,000+ files, 32 lines, parties, over 3000 members. [Exp. #105.]

LA Online. (310)372-4050, (714)447-0449, 441-0693, (818)577-2131. LA's largest online service. Shopping, events, movies, local news, dining, and more. Free. [Exp. #106.]

Lynzie's Motherboard. (213)650-0519, (310)421-3767, (714)776-4198 (805)520-2300, (818)989-3875. 8-N-1, 24 hrs., 300/1200/2400. 32 lines, multiuser/group & private chats, 2GB, email, public forums, library, and matching. More local numbers available online. Sysop: Celeste Clark. [Exp. #109.]

Modem Butterfly. (213)264-6900, (310)767-1010, (805)581-0700, (714)828-5500, (818)798-9900. 8-N-1, 1200/2400. Instant access, 800MB, SIGs, 33 conference lines, events, trivia contests. [Exp. #107.]

Original Apple Corps BBS. (213)454-4660, (310)454-4660. 300/1200/2400. Apple II support. Free. Sysop: Sheila Dowst. [Exp. #105.]

The Royal Rook II. (213)934-5749, (818)782-3664. 8-N-1, 24 hrs., 1200/2400. Musicians support board, SIGs, email, teleconferencing. First month free. Sysop: LaJenna Clark. [Exp. #104.]

213

The Career Network. (213)623-8503. 5 pm–12 am, 300/1200/2400. Job hunting. Now your resume can reach over 250 major employers each month. Sysop: Steven McCormick. [Exp. #106.]

The Communication-Fax-Link. (213)384-4394. Messages faxed, free, donations accepted. Voice: (213)384-0325. [Exp. #106.]

Inner Space BBS. (213)464-4614. 24 hrs., 1200/2400/9600/14,400. Alternate religions, altered states, ecology, metaphysics, new age, occult, UFOs, philosophy. [Exp. #106.]

LAAUGLine. (213)387-1002. 24 hrs., 300/1200/2400. Amiga. Sysop: Thom Irwin. [Exp. #106.]

Megabytes BBS. (213)221-6379. 8-N-1, 300/1200/2400. Specializing in Windows 3.x. shareware. Sysop: William Rivas. [Exp. #104.]

The Westside. (213)933-4050. LA's most active adult system, 70 lines, chat, online games, and more. Free trial for mentioning *MicroTimes*. [Exp. #104.]

310

A-American BBS. (310)305-0441. 8-N-1, 24 hrs., 300/1200/2400/9600. Programming, scientific, Ham radio, scuba, adult images, jobs, entrepreneurial forums. Sysop: John Lewis. [Exp. #105.]

Amiga Artists Club & BBS. (310)618-0538. 8-N-1, 24 hrs., 300/1200/2400/9600/16,800. UL/DL, 170MB, Art SIGs, Amiga bases, and online games. [Exp. #106.]

Amulet BBS. (310)453-7705. 24 hrs., Specializing in xBASE and cyberspace. Free. Sysop: Dan D. Gutierrez. [Exp. #106.]

The Bad Boy BBS. (310)915-8590. 24 hrs., 300/1200/2400. Ham radio, SWL, scanner info. OCAPS approved. Access first call, free. Sysop: Danny Barker. [Exp. #106.]

Citizen America BBS. (310)453-7564. 8-N-1, 24 hrs., 300/1200/2400. Support for Citizen printers & computers. Sysop: Citizen America. [Exp. #105.]

Compu-Net! BBS. (310)823-3609. 300/1200/2400/9600. 1GB, 15 separate systems in one call. Adult, finance, sports, Windows, occult, IBM, and more. [Exp. #105.]

Cosmos. (310)539-3078. 7:30 pm–7:30 am. 2400. One line, WWIV software, subs, huge file section. Sysop: Gabriel Hayes and Wayne Pan. [Exp. #104.]

Crazy World. (310)453-5688, 453-2504. 600MB, Amiga user support, member Fido and Clink networks. All amiga nuts welcome. Sysop: Agnius Griskevicius. [Exp. #106.]

Digital Visions. (310)408-0490. 8-N-1, 24 hrs. GIF images, Raytracer programs, Special EFX Animation created by the sysop and users. Free sample files. Sysop: Dion Kraft. [Exp. #106.]

The Downey BBS. (310)806-2226. 2400/9600/14,400. RIME network conferences, Internet/UUCP mail access, DOS software. Sysop: Mark Motley. [Exp. #106.]

Drug Abuse Information (DIAMP). (310)825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, email, downloads, and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #104.]

The Great CHR$(27). (310)693-7907. 24 hrs., 1200/2400. 12 Steps, BASIC Programming, C, TECH Talk. No fees. [Exp. #106.]

Hatch.uucp. (310)822-3970. 1200/2400/9600. Usenet feeds, 1200 Newsgroups, worldwide internet email, domain addresses avail. Sysop: Mike Barnadett. [Exp. #105.]

Kluged—The Anarchist's BBS. (310)432-5305. 8-N-1, 24 hrs., 300/1200/2400. Open to anything. Shareware, games, programs, graphics, and message base. Free. Sysop: Martin. [Exp. #105.]

LA Computer Society BBS. (310)475-8720. 8-N-1, 24 hrs., 2400 only. Full access to Computer Society members ($36/yr), message bases, SIGs, and club information. Sysop: Debbie Rhodes. [Exp. #105.]

La Mirada's The Modems Delight BBS. (310)944-1221. 24 hrs., 300/1200/2400/9600. Multi-interest files, doors, games, and fun. Running Telegrad BBS v2.7, BlueWave Echo-mail, 1:102/430 Fidonet. Sysop: Ronald Dishon. [Exp. #104.]

LAMG (Los Angeles Macintosh Group). (310)559-MACS.

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BBS SPOTLIGHT

By John Wolcott

Spread Your Electronic Wings With Modem Butterfly's Connection

Computer bulletin board services today offer a wide variety of features. If you're not interested in the social interaction aspects of a BBS, many bulletin boards offering basic services are free. Full-featured bulletin board services, which include group chat features, are available on a subscription basis. For many, chat features provide a computer hobby within the hobby.

The BBS Spotlight this month focuses on a BBS that goes beyond ordinary chat features.

Modem Butterfly's Connection, available to the BBS enthusiast for over a year and a half, specializes in adult-oriented social interaction, including chatting and networking, biographical information for other system users, and an extensive library of download files. System Operators Karyn Zoldan (Modem Butterfly) and Gregg Collins created the original dating BBS, Dial Your Match, in 1981. Between Karyn's originality and "people skills" and Gregg's technical abilities, Modem Butterfly's Connection has flourished.

They are the first to offer Instant Access. This feature allows instant user level upgrade to access all of the system features by calling 976-1000 for a one-day, 60-minute package or calling 1-900-990-9770 for a full month of unlimited access. This procedure takes less than five minutes.

After logging on, choosing an alias, and answering a biographical questionnaire, the greetings include upcoming user group events, who's currently connected to Modem Butterfly's Connection, and a prompt as to whether you have any system mail awaiting your attention. Your first log-in has mail from Modem Butterfly with system information. Your first order of business should be checking the "Telephone Access Numbers" feature from the main menu. Modem Butterfly's Connection offers local numbers from many areas of the Southland.

Once you're a validated system subscriber, the fun really begins. You will view a list of all users currently online denoting their age, sex, location, sexual preference, and what part of the system they are currently accessing. You may invite other users to a chat forum or leave messages in a public message board. Public message boards cover a wide range of topics including Networking—leads and jobs—food, cooking, health, sports and games, and dating. If that's not enough, you'll also find home improvement, music, classifieds, trivia, science fiction, pets, poetry, and even more. The public message boards for adult interaction include "Unmarried with children" and "Married but not dead" forums. You'll find discussion dealing with almost any issue you'd care to consider. The system even offers a barter arena for goods and services offered by other users.

Database files feature information ranging from CD-ROM file searches to Modem Butterfly Connection's user trait specifics and even recipes based on ingredient input. Files available for download include a CD-ROM library that is upgraded quarterly with new CD-ROM disks. This allows you access to the latest and greatest public domain and shareware files. Plenty of GIF files occupy the library, including pictures of system users at special events. Also available is an expansive library of adult-oriented software files.

It is clear that the system specializes in matchmaking for the computer hobbyist. Matchmaking among the users is enhanced by multiple system search features. From the Database Menu, you may view the essay questionnaires submitted by other users, see who has a birthday on any date, find a user's birthday, or search for other users' compatibility statistics, based upon hobbies, religion, name, city and state, marital status, Zodiac sign, or type of computer.

Users boast being "thinkers and doers." Intellectual challenge presents itself with online trivia contests, political debates, year-end tax strategy, and spontaneous contests for consumers, gourmet chefs, celebrity hounds, historians, and the profoundly curious. For example, raise your hand if you know what "arachibutyphobia" is...(Arachibutyphobia is the fear of peanut butter sticking to the roof of your mouth.)

Modem Butterfly's Connection goes a step beyond the keyboard with the social aspects of the computer world. Special events are a regular commodity among the system users with seasonal parties, writers' group meetings, an adopt-a-beach clean-up and scavenger hunt, a Theater Throng, karaoke parties, monthly neighborhood

Continued on page 135

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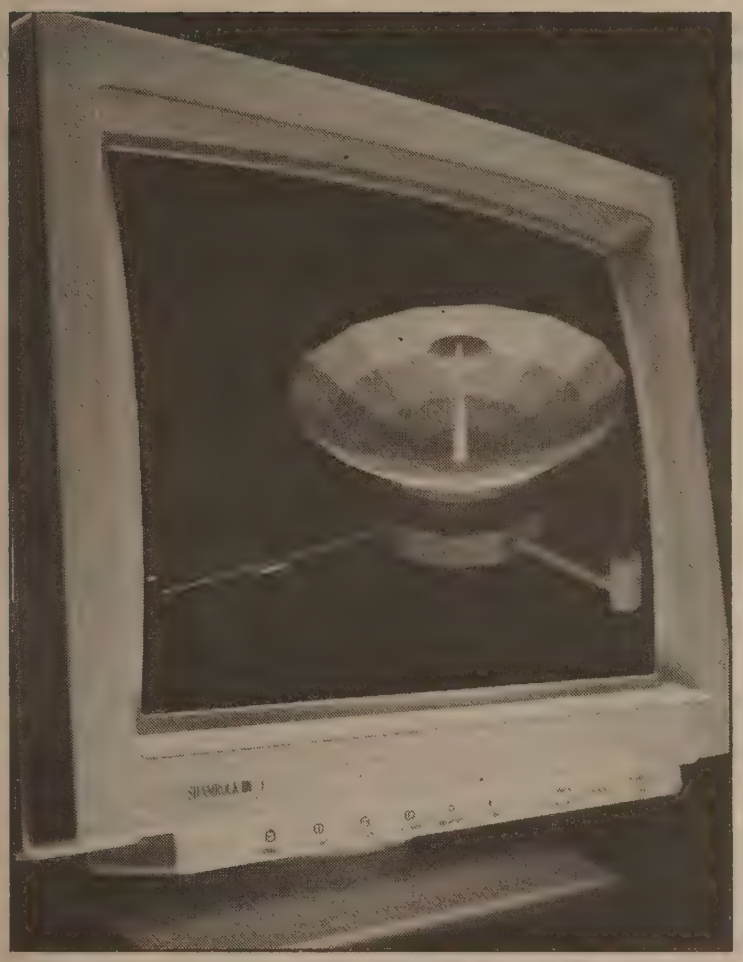

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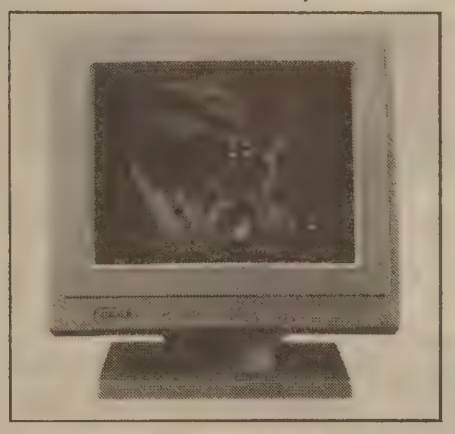

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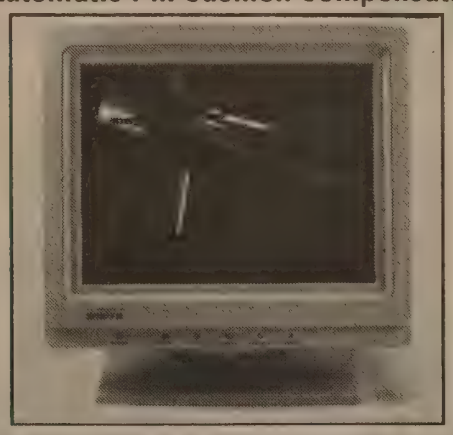

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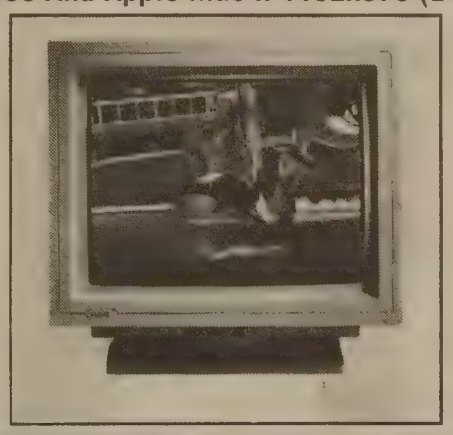

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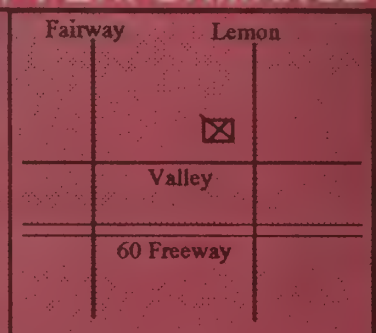

BBSes

8-N-1, 24 hrs, 300/1200/2400/9600/14,400. So. Cal's busiest all Mac multiline BBS. 300MB of Mac news, reviews, rumors, and more. [Exp. #106.]

modemBoy. (310)659-7000. 8-N-1, 300/1200/2400. Serving the gay community, instant access. [Exp. #107.]

Music Network, USA. (310)312-8753. Midi software, industry seminar, songwriters workshop, musicians referral service, and more. [Exp. #106.]

One World. (310)372-0987. 8-N-1, 300/1200/2400/9600/14,400. Ecology, gardening, health, alt. news, Int'l network. Free. [Exp. #106.]

The original off off-broadway BBS. (310)453-7038. 8-N-1, 24 hrs., 300/1200/2400/9600. Non-subscription, text files/messages only. Using MajorBBS software and CompuCom Speedmodem. Sysop: James Gossage. [Exp. #106.]

Paradise Cove BBS. (310)421-4788. 24 hrs., 1200/9600/14,400. Hot new BBS! multiuser/group & private chats, over 3GB, public forums, matching. Free (for a limited time). [Exp. #106.]

The Profit Quest BBS. (310)318-1413. 1200/2400. Networking the small and medium-sized business community. Free. Sysop: John Fransosky. [Exp. #104.]

Quadrature Peripherals BBS. (310)327-7042. 1200/2400. Digitized video, D/L GIFs and shareware. No fee. Sysop: Slash. [Exp. #106.]

Servant Christian BBS. (310)371-2770. 1200–16,800. Christian information and programs for the Mac and PC, extensive transfer, instant access. Free. Sysop: Douglas Wade. [Exp. #106.]

The South Bay BBS. (310)219-1276. 300/1200/2400. Free, instant access, new. Sysop: Tony Hughes. [Exp. #105.]

South Bay Commodore Users Group (SBCUG). (310)643-8818. 24 hrs., 300/1200/2400. Graphics and library. Sysop: Jeffery Baldwin. [Exp. #105.]

619

Big Sky BBS. (619)368-0997. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. 810MB online, TAG, Amiga and IBM files and programs, Fred Fish, music, adult. Online first time. Sysop: Larry Wieland. [Exp. #104.]

Satang BBS. (619)364-0033. 8-N-1, 24 hrs., 300/1200/2400. 170MB online, Wildcat! IBM files & programs, religion and metaphysics. Sysop: Ed Shimko. [Exp. #104.]

Techpro BBS. (619)755-7357. 300/1200/2400/9600/14,400. San Diego technical jobs. *USA Today, Boardwatch, Microbytes Daily.* 100% free. [Exp. #104.]

714

Astronomer's BBS. (714)738-4331. 2400. Digitized space images, NASA news, piggyback AMSAT BBS, daily satellite GIFs. Sysop: Walter Clark. [Exp. #105.]

The Black Crystal BBS. (714)638-3581. 24 hrs., 1200/2400/9600/14,400. Online games, shareware, GIF files. Sysop: Larry Tournay & Chris Wilson. [Exp. #106.]

The Central Office Public Data eXchange. (714)840-2437. 24 hrs., 300–14,400. Telecommunications, off-highway vehicles, Baja California/Mexico. Three BBSes in one, each independent. [Exp. #105.]

Computix. (714)540-6217. [Exp. #104.]

Controversy Now! BBS. (714)821-4548. 2400/9600/14,400. Specializing in a wide assortment of adult files and other useful programs. Free. Sysop: Larry Xikis. [Exp. #104.]

Diaspar Virtual Reality Network. (714)831-9101 (2400), 362-9995 (9600). Home EduTainment Center, 20+ lines, experience virtual reality. Sysop: David Mitchell. [Exp. #106.]

The Drop Zone! BBS. (714)245-3854. Games, utilities, adult GIFs, nationwide echo-net, 1.2GB online. Reg required. Sysop: Rick Simmons. [Exp. #106.]

Easy Street. (714)590-4307, 778-5473. 8-N-1, 24 hrs., 300/1200/2400/9600. 20,000+ files, adult fun, 42 lines w/local access throughout Orange County. [Exp. #106.]

ExecuClub BBS. (714)640-1950. CD-ROM, GeoWorks, Windows, FaxDepot, Business, MatchMaker. [Exp. #104.]

The Hotline BBS. (714)857-0233, 256-8672. 8-N-1, 24 hrs., 300/1200/2400. PD software, matchmaking, 16 chat lines, social events. Sysop: John Coon. [Exp. #105.]

Infinity BBS. (714)379-1335. 16 lines, one GIF file library, teleconference, games, email, and current satellite weather pics. Sysop: Eric Robitaille. [Exp. #105.]

Lake Forest BBS. (714)770-0728. 8-N-1, 24 hrs., 300/1200/2400. IBM only, using Gap for forums, doors, and filebase. Free. Sysop: Joe Hsu. [Exp. #104.]

The Master Connection BBS. (714)651-9815. 24 hrs., 1200/2400/9600. Lots of games, utilities, graphics. No fee. Sysop: Mark Duvall, Jr. [Exp. #106.]

Music Insider BBS. (714)992-2721. 24 hrs., 1200/2400. For the pro: songwriter, musician, MIDI user, and player. Electronic "tip sheet," w/40+ major recording artists currently looking for material. Sysop: Douglas Boughter. [Exp. #104.]

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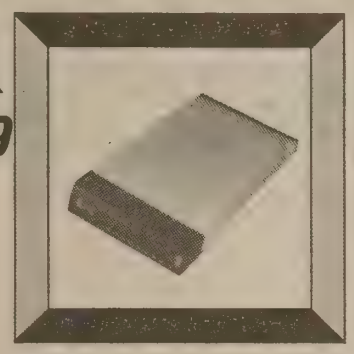

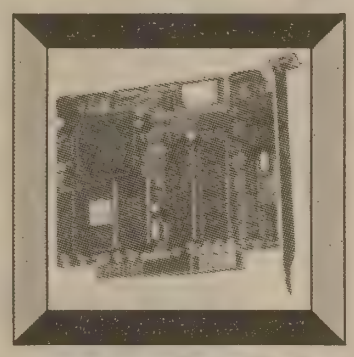

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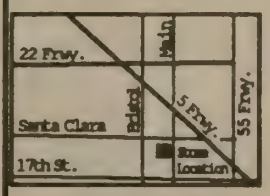

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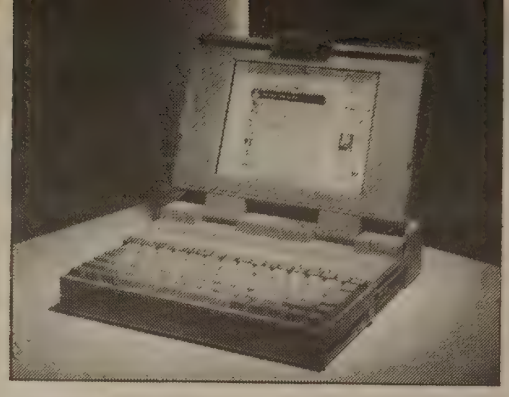

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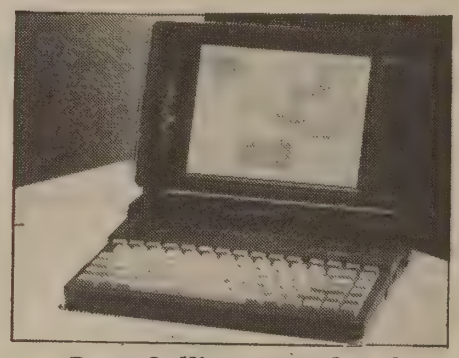

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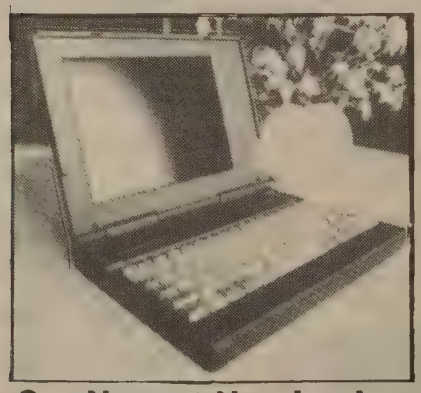

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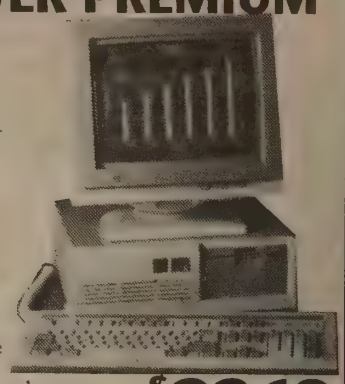

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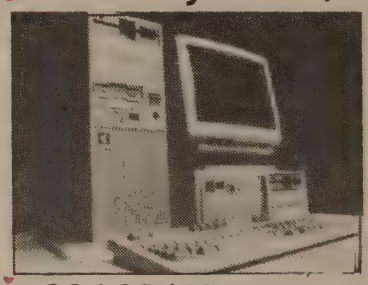

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PC-Applications BBS. (714)432-9104, 557-8351, 557-6688. 24 hrs., 1200–14,400. Online games, email, echo-mail, over 300 conferences. Full access on first call with call back verifier. Sysop: Dave Robinson. [Exp. #106.]

The PC Sports Connection. (714)533-6728. 8-N-1, 24 hrs., 300/1200/2400. Using Searchlight for unique games, fantasy leagues, and sports talk. Sysop: Keith Jefferson. [Exp. #105.]

Sherlocktron. (714)492-0724. 8-N-1, 24 hrs., 2400. Sherlock Holmes BBS with lists of societies, publications, and purveyors. Sysop: Willis G. Frick. [Exp. #104.]

SOCCC BBS. (714)373-0964. 24 hrs. Public domain & shareware for IBM, Apple & CP/M. Sysop: Brian A. Fliege. [Exp. #106.]

Starbase Atlantis. (714)871-8810. 1200/2400. Fun for all, esp. Tradewar players. Sysop: James Wihardja. [Exp. #104.]

Trixie's Doghouse. (714)499-2864. 8-N-1, 24 hrs., 300/1200/2400/9600/14,400. Specializing in topics related to pets. Full access with callback. Sysop: Jason MacDonald. [Exp. #106.]

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805

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818

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InvestorLink. (818)960-9362. 24 hrs., 2400. Financial stocks, Real Estate, Mutual Funds, daily updates. Free. Sysop: Steve Painter. [Exp. #105.]

Mysteria. (818)353-8891. 300–14,400. Metaphysics and general. Fidonet. Free. Sysop: Phil Hansford. [Exp. #106.]

Out Of The Blue BBS. (818)332-2227. 8-N-1, 2400. [Exp. #104.]

Panasia BBS. (818)569-3740. 1200–14,400. Glendale, QWK/REP, Intelac RegHub, no fees. [Exp. #104.]

Parthenon BBS. (818)727-7070. 24 hrs., 300/1200/2400/9600/14,400. Utils, Windows, Toshiba stuff, Usenet feeds. Sysop: Steven Foster. [Exp. #104.]

PC Solutions BBS. (818)776-2397. 9600. Fidonet, all the latest warez, games, utils. Free. [Exp. #106.]

The Rogue's Guild. (818)347-4291. 16,800. Fidonet, Irg file and message sections. US Robotics Dual Standard 16.8K. [Exp. #106.]

Sahara Club. (818)893-1899. 8-N-1, 1200/2400. Off-road, timber, guns, and more. Fidonet, free. Sysop: Patrick Martin. [Exp. #106.]

Software Bank. (818)993-5516. 2400/9600/14,400. OS/2, Windows, Star Trek Fidonet echos, QWK mail, 13,000 files for D/L. Free. [Exp. #106.]

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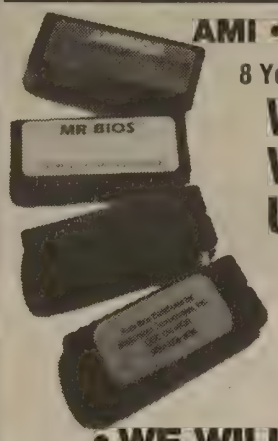

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Valley Apple Computer BBS. (818)782-6471. 300/1200/2400. Friendly to beginners, uploading and downloading Apple II only. [Exp. #106.]

Wizardry BBS. (818)222-4444. 1200/4800/9600/14,400. Chat, games, U/L, D/L, mulitline. Free. [Exp. #104.]

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Video ViSion BBS. (916)682-1655. 24 hrs., 300/1200/2400/9600. Games, graphics, Windows & source code. 360MB. Sysop: Roel Sarceno. [Exp. #105.]

ASSOCIATIONS

Black Data Processing Assoc., LA Chapter. Meetings: 4th Tues., 6:30 pm, ULTC, 7266 S. Figueroa St., Los Angeles. Call: (310)673-6522, 1-800-727-BDPA. [Exp. #107.]

Data Processing Management Association. Meetings: 2nd Thurs., 7:00 pm. An organization composed of all levels of management personnel who have an interest in the field of information processing. Call: (310)549-9680 or (213)225-9210. [Exp. #105.]

Independent Computer Consultants Association, Los Angeles Chapter. Meetings: 1st Thurs., 6:00 pm. Prepaid reservation, $25, or at the door, $35. The LA chapter provides referral services. Call: (213)872-1811. [Exp. #104.]

Microcomputer Managers Association, Los Angeles Chapter. A forum for the discussion of issues relating to implementing and supporting microcomputer technology. Call: (213)243-6843. [Exp. #104.]

Orange County Association Of PICK Professionals. Meetings: 3rd Wed., 6:00 pm, Claim Jumper Restaurant, 18350 Brookhurst St., Fountain Valley. Dinner: Members, $20; nonmembers, $25. Without reservations add $5 additional. Call: (714)641-6347. [Exp. #106.]

The Software Council Of Southern California (SCSC). Non-profit organization for software developers to have a (peer-to-peer) networking and educational forum on industry issues. Call: (310)328-0043. [Exp. #104.]

USER GROUPS

ACCOUNTING

Orange County ACCPAC Plus Accounting Software User Group. Meetings: 3rd Mon., 6:00 pm. Call: (714)535-5417. [Exp. #107.]

ADAM

Inland Empire Adam User Group. Meetings: 3rd Sat., 12:30 pm, Anaheim Public Library, 1340 S. Euclid. Since 1986, LA and Orange Ccunties' only group and newsletter for the Coleco Adam. Call: Tom, (714)538-6254. [Exp. #105.]

AMIGA

LAAUG—Los Angeles Amiga User Group. Meetings: 3rd Wed., 7:30 pm, Veteran's Memorial Auditorium, Overland Ave. & Culver Blvd. Many SIGs, rookies, monthly PD disks. Call: Kip Hammond, (310)390-3010. [Exp. #105.]

San Fernando Valley Amiga User Group. Meetings: 2nd Tues., 7:00 pm, Meeting Room, Fallbrook Mall. Call: Tony, (818)985-0476. [Exp. #105.]

South Orange Commodore Klub—SOCK. Meetings: 3rd Sat., 9:00 am, Computer Guild, Suite 1003, 24001 Via Fabricante, Mission Viejo. Supports Commodore and Amiga, new users SIG. Call: Don, (714)830-2430. [Exp. #109.]

APPLE

Orange Apple Computer Club. Meetings: 1st Sat., 9:00 am, Orange Coast College, Chemistry Lab. Apple II supported. Call: (714)731-9243. [Exp. #104.]

Original Apple Corps, Apple II User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #104.]

Tri-City Apple Users Group. Meetings: 3rd Thurs., 7:00 pm, Pasadena Central Library, 285 E. Walnut St. Friendly Apple II experts. Call: (213)258-0281. [Exp. #106.]

Valley Apple Computer Club. Meetings: 3rd Tues., 7:30 pm. Aggeler High School, 21050 Plummer, Northridge. All Apple IIs, no Macs. Call: Bill, (818)988-1752. [Exp. #106.]

ATARI

ATESIG—Atari 8-bit SIG. Meetings: 145 Surf Pl., Seal Beach. Cooperative user group for Model Railroad applications. Call: (310)430-5433. [Exp. #106.]

RAM Atari ST User Group Of Ventura County. Meetings: 3rd Wed., 7:30 pm, Call: Tim, (805)389-0059 or write PO Box 112, Camarillo, CA 93011. [Exp. #104.]

South Bay Atari Computer Enthusiasts. Meetings: 2nd Tues., 7:30 pm, Lomita VFW Hall, 1865 W. Lomita Blvd. Active since 1985, novices & all skills welcome. Call: (310)375-4839. [Exp. #104.]

CAD/CAM

Los Angeles Area AutoCAD User Group. Meetings: 4th Wed., 6:30 pm, Burbank Board of Realtor's Bldg., 2006 W. Magnolia Blvd., Burbank. Meetings feature tutorials, Q&As, demos, hands-on, BBS, and newsletter. Call: M. Berman, (818)762-9966. [Exp. #105.]

CLIPPER

Los Angeles Clipper User Group. Meetings: 4th Wed., 6:30 pm, Culver City. Techy talk and speakers. Call: Louise Astorga, (818)886-1574. [Exp. #107.]

COMMODORE

C128 West Commodore 128 User Group. Meetings: Covina & Santa Monica. Free membership. Large disk library. Call: John, (818)331-1589; Paul, (818)892-3859; BBS, (714)598-1755 FidoNet. [Exp. #104.]

C-TUG (Commodore Technical User Group). Two meetings: 2nd Thurs., 2:00 pm, 2233 N. Tustin Ave., Orange, and 4th Sun., Seniro Citizen Center, 170 S. Olive. Speakers, demos, help with any Commodore and Amiga questions. Call: Lou Palush, (714)532-1802. [Exp. #109.]

Commodore Helpers Of Long Beach. Meetings: 2nd Sat., 9:00 am. St. Timothy's Lutheran Church, Woodruff and Arbor in Lakewood. Supports 64/128 models. Call: Tom Hoy, (310)424-0508. [Exp. #105.]

Orange County Commodore Club. Meetings: 4th Sat. Orange County Public Library, Park Ave. Branch, 1855 Park Ave., Costa Mesa. Call: Mike Moore, (714)668-9715. [Exp. #105.]

South Bay Commodore Users Group. Meetings: 3rd Thurs, 7:00 pm. SEC Redondo Generating Station, 1100 Harbor Dr. (across from King Yacht Harbor). Free and open to all who use or own Commodore computers and to those who would like to receive or exchange information on programs, applications; or hardware. Call: (310)324-8357. [Exp. #104.]

dBASE

LA FoxPro User Group. Meetings: 3rd Tues., 7:30 pm. All levels welcome. Call: Chuck, (310)539-9439. [Exp. #109.]

DESKTOP PUBLISHING

Southern California Ventura Publisher User Group (SC-VPUG). Meetings: Last Tues., 7:00 pm, 401 N. Brand, Glendale, Glendale Federal Bank Building. Product demos, Q&As, library resources. Call: (818)955-5830. [Exp. #107.]

IBM & COMPATIBLES

Greater South Bay PC User Group. Meetings: 2nd Thurs., 7:30 pm, Christ King Lutheran, 2706 W. 182nd St., Torrance. Visitors welcome. Call: (310)329-2804. BBS: (310)516-0834. [Exp. #107.]

Long Beach IBM PC And Compatibles User Group. Meetings: 3rd Wed, 7:00 pm, Los Altos Methodist Church, 5950 E. Willow St., Long Beach. Call: Jim Wells, (310)439-7114. [Exp. #109.]

Los Angeles Computer Society. Meetings: 2nd Tues., 7:00 pm, Culver City High School Cafeteria. Meetings are free and there are always live presentations and giveaways. Call: (310)473-6668. [Exp. #104.]

NOCCC Business & Spreadsheets SIG. Meetings: 1st Sun., 11:00 am, Chapman College, City of Orange. One of 22 SIGs. Call: (714)998-8080. BBS: (714)962-1857. [Exp. #104.]

Orange County IBM-PC Users Group. Meetings: 2nd Tues., 7:00 pm, Computer Learning Center, 1240 S. State College Blvd., Anaheim. Speakers, software, newsletter. Open to public, all welcome. Call: (714)990-0580. [Exp. #109.]

Public Domain User Group. 1000s of programs for IBM, CP/M, and Commodore computers. For catalog send SASE to: Zoltan Berbely, Disk & That, 1226 E. 7th St., Los Angeles, 90021. [Exp. #105.]

Thousand Oaks Personal Computer Club (TOPCC). Meetings: 4th Thurs., 6:30 pm, Goebel Senior Adult Center, 1385 E. Janss Rd., Thousand Oaks. Call: (805)495-8325. [Exp. #109.]

KAYPRO

West Los Angeles Kaypro User Group/KAYOS Kaypro User Group. Meetings: 4th Mon. of even months, 6:30 pm, El Segundo. Call: Margot, (310)379-8339. [Exp. #104.]

K-MAN

Southern California KnowledgeMan User Group. Meetings: 1st Wed., 7:00 pm, Honda North America, Bldg. 300, 700 Van Ness Ave., Torrance. Call: (213)662-9910. [Exp. #104.]

MACINTOSH

The American Film Institute Mac User Group (AFIMUG). Meetings: 2nd Mon., Apple Lab, AFI, Hollywood. TV, film, and video. Call: Dave Chadderdon, (213)856-7743. [Exp. #105.]

Los Angeles Macintosh Group (LAMG). Meetings: 3rd Thurs., 7:30 pm, Dept. of Water & Power, 111 N. Hope St. So. Cal's largest all-Mac user group meetings, monthly magazine, classes, PD software, and more. Call: (310)278-LAMG. [Exp. #109.]

Original Apple Corps, Macintosh User Group. Meetings: 2nd Sun. Support for beginners through experts. Write: PO Box 90065, Los Angeles, CA 90009. Call: Fred Duffy, (310)475-8400. BBS: (310)454-4660. [Exp. #104.]

South Bay Apple Macintosh User Group. Meetings: Last Wed., 7:30 pm, Pacific Elementary School, 1214 Pacific Ave., Manhattan Beach. Call: (310)644-3315. [Exp. #105.]

West Orange County Macintosh User Group (WOCMUG). Meetings: last Tues., 7:00 pm, F&M Bank, 12535 Seal Beach Blvd., in the Rossmoor Shopping Center. Visitors always welcome! Topics for beginning to advanced users. Call: (310)493-1240. [Exp. #104.]

NETWARE

Kern County NetWare Users Association. Meetings: 3rd Thurs. (no meetings in July, August, and December), 5:45 pm, Occidental Bldg., 1200 Discovery Way, Bakersfield. Call: William Morrison, (805)763-6933. [Exp. #105.]

NETWORK

TUG-NET. Meetings: 1st Thurs., 7:00 pm, Tektronix Corp., 21300 Erwin St., Woodland Hills. Enter through back door of building, press buzzer. Call: (818)249-1629. [Exp. #107.]

NeXT

Southern California NeXTSTEP User Group. Meetings: throughout LA County. Call: Mike Mahoney, (310)985-1550 or Bob Desharnais, (213)343-2056. [Exp. #106.]

OS/2

LA OS/2 User Group. Meetings: 3rd Thur., 6:30 pm, IBM, 21041 Burbank Blvd., Woodland Hills. Call: Paul Duncanson, (805)584-8732. [Exp. #107.]

POWERBUILDER

Southern California PowerBuilder User Group. Meetings: 1st Tues. Technical presentations, networking, idea exchange. Call: (310)241-8181, ext. 36 or ext. 39. [Exp. #109.]

PROGRAMMING LANGUAGES

APL User Group—SoCal SIGAPL. Meetings: 2nd Wed., Los Angeles City College. Membership includes newsletter. Call: G. Smith, (213)560-2174. [Exp. #109.]

Forth Interest Group, Los Angeles Chapter. Meetings: 4th Sat., 10:00 am, Joslyn Center, 339 Sheldon St., El Segundo. Discussions, presentations, and tutorials include Forth, C, J, smalltalk, C++, OOP, hardware, algorithms, and operating systems. Call: John LuValle, (818)797-1820. [Exp. #109.]

TEXAS INSTRUMENTS

TI/944A Home Computer User Group. Meetings: 2nd Mon., 7:00 pm, Pomona First Federal, 9090 Central Ave., Montclair. Monthly newsletter, demos, and fairware. Call: (714)627-3403. [Exp. #105.]

UGOC. Meetings: 2nd Mon., Fidelity Federal, 13820 Seal Beach Blvd. Call: Joan, (714)633-5379. [Exp. #107.]

THEOS

THEOS User Group. Call: Fred Bellemy, (805)965-0265. [Exp. #105.]

UNIX

UNIX User Association Of Southern California. Meetings: 2nd Mon., 7:00 pm, New Horizons Learnings Center, 1231 E. Dyer Rd., Santa Ana. Call: Vince, (714)556-1220, ext. 126. [Exp. #104.]

VIDEO TOASTER

TUG—Toaster Users Group Of Orange County. Meetings: 3rd Thurs. Call: Bruce, (714)894-1777. [Exp. #106.]

VIRTUAL REALITY

Virtual Reality Special Interest Group (VRSIG). Meetings: The Electronic Cafe, 1649 18th St., Santa Monica. Call: Dave Blackburn, (310)545-0369. [Exp. #105.]

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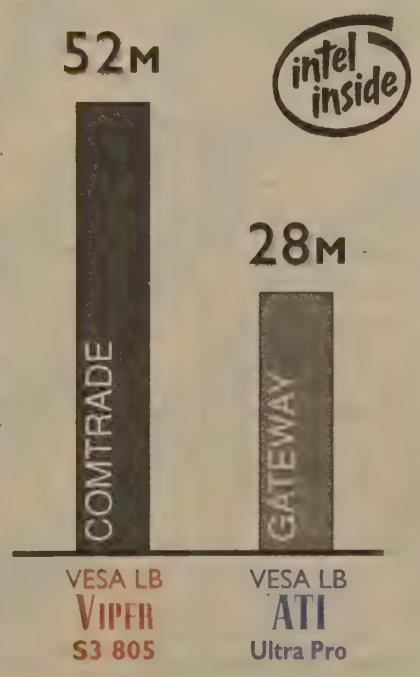
Comtrade Kicks Their Bus!

In Comparison With Gateway 2000's VESA Local Bus ATI Ultra Pro.



Based on WinMarks 2.5 as of Dec 1992
***Million Pixels Per Second (486/66DX2)*
Standard SVGA has only 1.4M WinMarks
VL-Bus TSENG ET-4000 has a 5.3 WinMarks

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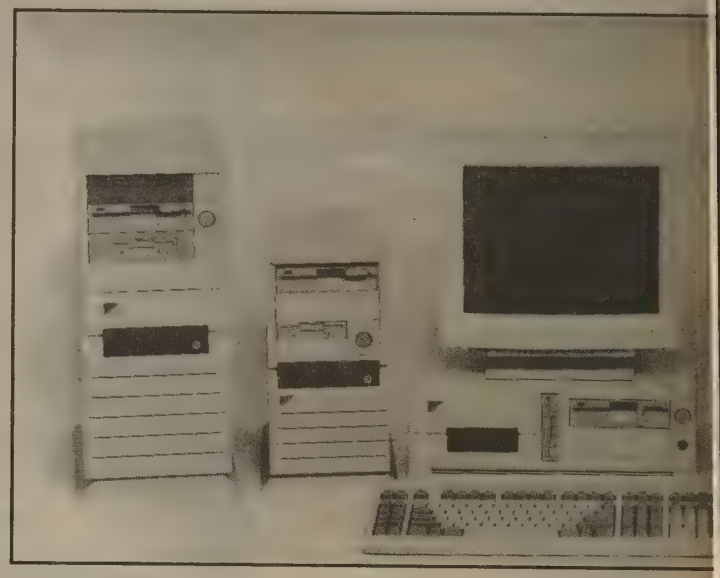

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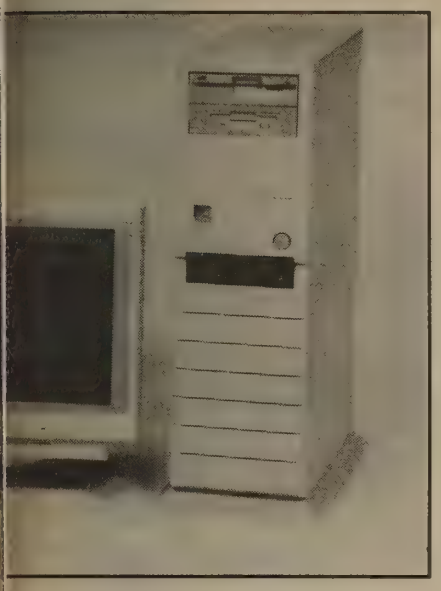

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Sound Blaster Pro (Full version) $189
Media-Vision Pro Audio Spectrum 16 Sound Card $189
Orchid Sound Producer Pro $179

For EISA & Local Bus Systems:

ViewSonic 6E 14" Non-Interlaced Monitor $328
ViewSonic 5E 14" Non-Interlaced Monitor $395
ViewSonic 6FS 15" Non-Interlaced Monitor $575
ViewSonic 7 17" Multi-Frequency Monitor $995
ViewSonic 8 20" Multi-Frequency Monitor $1575
CTX-5468NI 14" Non-Interlaced Monitor $315
CTX-1461 14" Non-Interlaced Monitor $335
CTX-1560 15" Non-Interlaced Monitor $445
CTX-1760 17" Non-Interlaced Monitor $795

Memory Upgrade:

4MB 386SX) $75
8MB (486DX/SX, 386DX) $150
16MB (486DX/SX,386DX) $480

Tape Backup:

Archive 250MB Tape Backup $215

For more parts see listings on next page ➤

For systems see list on front pages

ESSENCE GROUP

COMPLETE NETWORK SOLUTION, PLUG & PLAY.....

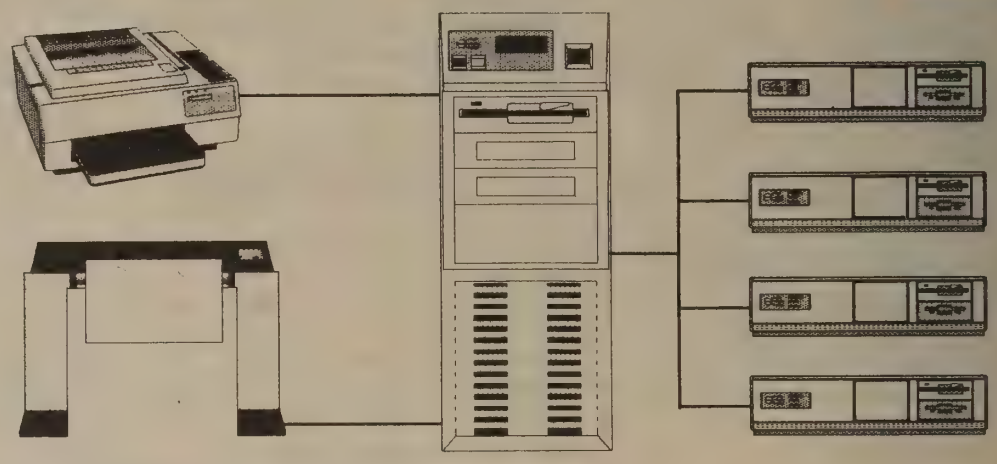
IN ESSENCE, WE ONLY USE QUALITY NETWORK PRODUCTS INCLUDED:

Network Cards: **Eagle, Intel, Accton, 3COM, SMC, Thomas-Conrad**
Controllers: **Always, Adaptec, DTC, Future Domain, UltraStor**
Hard Disk: **Conner, Fujitsu, Maxtor, Micropolis, Seagate, Storage Dimension**
Uninterruptiable Power Supply: **American Power Conversion, Tripp-Lite**
Tape Backup: **Colorado Memory System, Maynard/Archive, Mountain, Summit Express, Tecmar, Wangtek**

Novell Certified NetWare Engineer

FILESERVER:
ESSENCE 486DX-33MHz System
- VEGA 486DX-33MHz M/B
- 256K High Speed Cache
- 8MB Memory expandable to 32MB
- TEAC 1.2M & 1.44M FDD
- Always IN-2000 SCSI Controller
- Maxtor 340MB SCSI HDD
- 12" Monochrome Monitor w/MGP
- 2 Serial / 1 Parallel Ports
- Full size Tower Case w/300Watt PS
- Dual fan for efficient cooling
- Enhanced 101 Keys Keyboard
- Intel EtherExpress 16-bit Ethernet Card
- Pre-loaded with Novell 3.11 Software

5 User Filesever..... $1995.00
10 User Filesever..... $3195.00
20 User Filesever..... $4195.00



Please call for different configurations for Fileserver or workstations.

WorkStation:

ESSENCE 386DX-40MHz System
- 386DX-40MHz M/B w/64K Cache
- 4MB Memory
- TEAC 1.2M & 1.44M FDD
- 14" SuperVGA Monitor w/1MB VGA Card
- 2 Serial / 1 Parallel Ports
- Mini Tower Case w/230Watts PS
- Enhanced 101 Keys Keyboard
- Intel EtherExpress 16-bit Ethernet Card

$1019 per station

ESSENCE 386SX-33MHz System
- 386SX-33MHz M/B
- 2MB Memory
- TEAC 1.2M & 1.44MB FDD
- 14" VGA Monitor w/256K VGA Card
- 2 Serial / 1 Parallel Ports
- Mini Tower Case w/230Watts PS
- Enhanced 101 Keys Keybaord
- Intel EtherExpress 16-bit Ethernet Card

$779 per station

At Essence, we provide you with quality, reliability and value .....

- ❑ **CNE In-House or On-site Service**
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This Month Specials:

$489

Turn your PC into the ultimate entertainment experience.
Fusion CD 16 from Media Vision brings it all together - the power of rich CD sound and realistic 3-D graphics - into an exhilarating learning and entertaining experience. So now you can enjoy all the latest CD-ROM games and educational programs, as well as your favorite music CDs, all on your DOS or Windows based home computer! It's great fun and excitement for the entire family.
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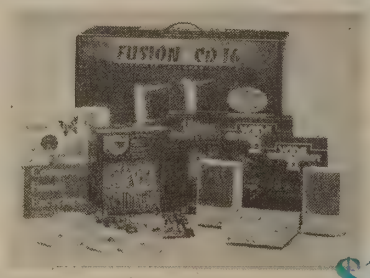
Fusion CD 16 gives everything you need - including high-performance hardware for amazing sound and stunning graphics.
- Fast SONY internal CD-ROM player
- Media Vision's awarding-winning PC stereo sound card
- High-quality Labtec amplified speaker system
- Plus best-selling CD games and educational programs

How Do You Choose Right Mobile Printer



$395

KODAK DICONIX 701 Printer
"Provides speed and paper handling that no other portable can match."
"Its built-in 30-page cut-sheet feeder makes it the best choice for long-term stays and transportable desktop applicaions"
– PC Magzine, August 1992

- 30-sheet built-in paper feeder
- 5.6lbs.; 11.7"x7.7"
- 300x300 dpi laser-quality output
- Up to 3 ppm/200cps pint speed at 10cpi
- Whisper-quiet ink-jet operation
- Print portrait or landscape

New Monitors from CTX

CTX-1461 14" Non-Interlaced Monitor
- ❑ 14" .28dp Non-glare screen
- ❑ 1024x768 resolution (Non-interlaced)
- ❑ 72Hz refresh rate @1024 mode

$335

CTX-1560 15" Flat-Screen Monitor
- ❑ 15" .28dp Non-glare flat-square screen
- ❑ 1024x768 resolution (Non-interlaced)
- ❑ 72Hz refresh rate @1024 mode
- ❑ Digital Control
- ❑ IBM PC & Macintosh compatible

$445

CTX-1760DF 17" Flat-Screen Monitor
- ❑ 17" .28dp Non-glare flat-square screen
- ❑ 1280x1024 resolution (Non-Interlaced)
- ❑ Digital Control
- ❑ IBM PC & Macintosh compatible

$795

ESSENCE GROUP

17815 Newhope Street, Suite G, Fountain Valley, CA 92708

Order Hot Line: 1-714-546-3110 ✧ Technical Support: 1-714-546-7902 ✧ Fax Order Line: 1-714-546-3803

SYSTEM BOARDS (0K)

VESA Local Bus System Boards (w/CPU)

Orchid 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$960.00
Orchid 486DX-50MHz VESA Local Bus M/B w/256K Cache	$905.00
Orchid 486DX-33MHz VESA Local Bus M/B w/256K Cache	$680.00
VEGA Baby 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$855.00
VEGA Baby 486DX-50MHz VESA Local Bus M/B w/256K Cache	$780.00
VEGA Baby 486DX-33MHz VESA Local Bus M/B w/256K Cache	$565.00
UMC Baby 486DX2-66MHz VESA Local Bus M/B w/256K Cache	$820.00
UMC Baby 486DX-33MHz VESA Local Bus M/B w/256K Cache	$530.00
Hint Baby 486DX2-66MHz EISA VESA Local Bus M/B w/256K Cache	$845.00
Hint Baby 486DX-33MHz EISA VESA Local Bus M/B w/256K Cache	$555.00
VESA Local Bus Video Cards & Controllers:	
ATi VLB mach 32 VESA Local Bus Accelerator w/2MB	$430.00
Genoa 1MB VESA Local Bus VGA Adapter	$165.00
Orchid Fahrenheit VESA Local Bus Windows Accelerator w/1MB	$195.00
Orchid VESA Local Bus Intelligent IDE Controller (2FDD/2HDD)	$64.00
VESA Local Bus IDE with Multi I/O Card	$58.00

EISA Bus & EISA Local Bus System Boards (w/CPU)

VEGA Baby 486DX2-66MHz EISA M/B w/256K Cache (USA made)	$1045.00
VEGA Baby 486DX-50MHz EISA M/B w/256K Cache (USA made)	$975.00
VEGA Baby 486DX-33MHz EISA M/B w/256K Cache (USA made)	$755.00
OPTI Baby 486DX2-66MHz EISA Local Bus M/B w/256K Cache	$980.00
OPTI Baby 486DX-50MHz EISA Local Bus M/B w/256K Cache	$915.00
OPTI Baby 486DX-33MHz EISA Local Bus M/B w/256K Cache	$695.00
- ET-4000 1MB Local Bus VGA Card (33, 50 or 66MHz)	$125.00
- S3 1MB Local Bus Graphics Accelerator (33 or 66MHz)	$225.00
- S3 1MB Local Bus Graphics Accelerator (50MHz only)	$255.00

ISA Bus System Boards (w/CPU)

VEGA Baby (3)486DX2-66MHz M/B w/256K Cache (USA made)	$825.00
VEGA Baby (3)486DX-50MHz M/B w/256K Cache (USA made)	$755.00
VEGA Baby (3)486DX2-50MHz M/B w/256K Cache (USA made)	$660.00
VEGA Baby (3)486DX-33MHz M/B w/256K Cache (USA made)	$555.00
VEGA Baby (3)486SX-25MHz M/B w/256K Cache (USA made)	$365.00
VEGA Baby 3(4)86DX-40MHz M/B w/64K Cache (USA made)	$257.00
VEGA Baby 3(4)86DX-33MHz M/B w/64K Cac(e (USA -ade)	$230.00
OPTI Mini 486DX2-66MHz M/B w/256K Cache (Write-back cache)	$775.00
OPTI Mini 486DX-50MHz M/B w/256K Cache (Write-back cache)	$710.00
OPTI Mini 486DX2-50MHz M/B w/256K Cache (Write-back cache)	$615.00
OPTI Mini 486DX-33MHz M/B w/256K Cache (Write-back cache)	$510.00
OPTI Mini 486SX-25MHz M/B w/256K Cache (Write-back cache)	$320.00
Symphony Mini 486DX2-66MHz M/B w/256K Cache	$775.00
Symphony Mini 486DX-50MHz M/B w/256K Cache	$715.00
Symphony Mini 486DX2-50MHz M/B w/256K Cache	$615.00
Symphony Mini 486DX-33MHz M/B w/256K Cache	$510.00
Symphony Mini 486SX-25MHz M/B w/256K Cache	$320.00
UMC Mini 486-33DLC M/B w/64K Cache (Cyrix 486-33DLC CPU)	$320.00
OPTI Mini 386DX-40MHz M/B w/128K Cache (Write-back cache)	$206.00
UMC Mini 386DX-40MHz M/B w/64K Cache (Write-back cache)	$199.00
OPTI Mini 386DX-33MHz M/B w/128K Cache (AMD CPU)	$184.00
UMC Mini 386DX-33MHz M/B w/64K Cache (AMD CPU)	$177.00
**** 256K Cache upgrade from 64K for all 486 and 386 M/B*	*$45.00*
**** 256K Cache upgrade from 128K for all 486 and 386 M/B*	*$30.00*
OPTI Baby 386DX-25MHz M/B (AMD CPU)	$159.00
OPTI Mini 386SX-40MHz MB w/16K Cache	$145.00
OPTI Mini 386SX-33MHz M/B	$126.00
C & T Mini 386SX-25MHz M/B	$121.00

ADD-ON BOARDS

Mono/Graphics/Printer Card	$15.00
AVGA-1 VGA Card w/256K	$27.00
TVGA-9000 VGA Card w/256K (Trident 9000 Chipset,upto 512K)	$35.00
TVGA-8900C 1MB SuperVGA Card (Trident 8900C Chipset)	$60.00
PVGA-1C VGA Card w/256K (WD90C11 Chipset,upto 512K)	$49.00
PVGA-1D SuperVGA Card w/1MB (WD90C30 Chipset)	$78.00
PVGA-1DW Graphics Accelerator w/1MB & Hi-Color Chip	$118.00
ATi Ultra Plus (1280x1024, 2MB Dram)	$330.00
ATi Ultra Pro (1280x1024 Non-Interlaced, 2MB VRam)	$430.00
Diamond SpeedStar-24X 1MB VGA Card (16Million colors)	$176.00
Diamond Stealth 1MB (VRam) Windows Accelerator	$228.00
Orchid Pro-Designer IIs 1MB VGA Card w/Sierra RAMDAC	$142.00
Orchid Pro-Designer IIs-E 1MB EISAVGA Card w/Sierra RAMDAC	$165.00
Orchid Fahrenheit Windows Accelerator (24-bit, 16.7Mil colors) w/1MB	$185.00
Orchid Fahrenheit-VA Windows Accelerator with Voice Annotation w/1MB - 24bit, 16.7Million colors, 1280x1024, Audio capabilities	$225.00
AT I/O (2 Serial 1 Parallel 1Game) Card	$14.00
Parallel (Printer) Card	$10.00
Game Card (Dual ports)	$10.00
AT IDE Adapter (Dual floppy & hard disk) w/Cable	$15.00
AT IDE Adapter w/2.88M FDD Controller & Cable	$57.00
AT Super IDE IO Adapter (Dual floppy & hard disk, 2S, 1P, 1G)	$22.00
GSI 2.88M Four (4) Floppy Controller & Cable	$68.00
GSI 2.88M Four (4) Floppy & Intelligent IDE Adapter w/Cable	$82.00
Promise IDE Caching Controller (512K,upto 8.5MB,2FD/2HD)	$128.00
DTC-2290 EISA IDE Floppy/Hard Disk Contorller	$125.00
DTC-3290 EISA SCSI Caching FD/HD Controller (0K,upto 4MB)	$375.00
DTC-3292 EISA FD/HD Controller	$330.00
UltraStor 15C IDE Caching FD/HD Controller w/0MB (upto 8MB)	$195.00
UltraStor 14F SCSI FD/HD Controller	$228.00
UltraStor 24F EISA SCSI FD/HD Controller	$375.00
Future Domain 1670 16-bit SCSI Floppy/Hard Disk Adapter Kit	$158.00
Always AL-1000 High Performance Parral Port to SCSI Host Adapter	$169.00
Always IN-2000 16-bit SCSI Host Adapter (Novell Certified)	$189.00
ADAPTEC AHA-1522BK SCSI Adapter Kit	$160.00
ADAPTEC AHA-1542BK SCSI Bus Master Host Adapter Kit	$260.00
ADAPTEC AHA-1542BK-Plus SCSI Bus Master Host Adapter Kit	$325.00
ADAPTEC AHA-1742AK EISA SCSI Bus Master Adapter Kit	$430.00

MONITORS

AcerView 11 14" VGA Monitor (640x480,.39dp)	$238.00
AcerView 33D 14" SuperVGA Color Monitor (1024x768,.28dp)	$298.00
AcerView 34T 14" Non-Interlaced Monitor (1024x768, 28dp)	$328.00
AcerView 35 14" SuperVGA Monitor (1024x768,.26dp)	$460.00
AcerView 56L 15" Multi-Frequency Color Monitor (Flat-Screen, Low radiation, 1280x1024,.28dp, 72Hz refresh rate @1024x768)	$490.00
CTX5439A 14" SuperVGA Color Monitor (1024x768,.39dp)	$235.00
CTX5468A 14" SuperVGA (TriScan) Color Monitor (1024x768,.28dp)	$280.00
CTX5468NI 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$315.00
MAG MX-15H 15" Color Monitor (1280x1024,.28dp)	$595.00
MAG MX-17H 17" Color Monitor (1280x1024,.28dp)	$1095.00
NEC MultiSync 3FGx 15" Color Monitor (1024x768,.28dp)	$660.00
NEC MultiSync 4FG 15" Color Monitor (1024x768,.28dp)	$770.00
NEC MultiSync 5FG 17" Color Monitor (1280x1024,.28dp)	$1315.00
NEC MultiSync 6FG 21" Color Monitor (1280x1024,.28dp)	$2365.00
Sony CPD-1304S 14" MultiScan Monitor (Non-Interlaced,.25dp)	$598.00
Sony CPD-1604S 17" MultiScan Monitor (Non-Interlaced,.25dp)	$995.00
Mini-Micro MM1256A 12" Amber Monitor	$86.00
Mini-Micro MM1457A 14" Amber Monitor	$104.00
Mini-Micro MM1457W 14" Paper-white Monitor	$106.00
Mini-Micro MM1467L 14" Paper-white MonoVGA Monitor	$126.00
Mini-Micro MM1468 14" VGA Color Monitor (640x480,.41dp)	$240.00
Mini-Micro MM1477 15" VGA Color Monitor (1024x768)	$445.00
ViewSonic 4E 14" SuperVGA Color Monitor (1024x768,.28dp)	$295.00
ViewSonic 6 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$335.00
ViewSonic 6E 14" Non-Interlaced Color Monitor (1024x768,.28dp)	$328.00
Viewsonic 5E 14" Non-Interlaced Color Monitor (1024x768,.28dp 72Hz refresh rate @1024x768)	$395.00
ViewSonic 6FS 15" Multi-Frequency Color Monitor (Flat-Screen, Low radiation, 1280x1024,.28dp, 72Hz refresh rate @1024x768)	$575.00
ViewSonic 7 17" Multi-Frequency Color Monitor (Digital Auto-Tracking Flat-Screen, Low radiation, 1280x1024,.28dp)	$995.00
ViewSonic 8 20" Multi-Frequency Color Monitor (Digital Auto-Tracking Low radiation, 1280x1024,.31dp)	$1575.00

FLOPPY & HARD DRIVES

TEAC 1.2MB FDD (5.25")	$55.00
TEAC 1.44MB FDD (3.5") w/Mounting Kit	$50.00
TEAC 2-in-1 1.2/1.44MB FDD	$132.00
TEAC 2.88MB FDD (3.5") w/Mounting Kit	$90.00
Conner CP-3000 40MB IDE HDD (29ms)	$150.00
Conner CP-30084 80MB IDE HDD (17ms)	$208.00
Conner CP-30104 120MB IDE HDD (17ms)	$260.00
Conner CP-30174 170MB IDE HDD (17ms)	$295.00
Conner CP-30204 210MB IDE HDD (12ms,256K cache buffer)	$420.00
Conner CP-3544 520MB IDE HDD (12ms,256K cache buffer)	$895.00
Conner CP-3540 520MB SCSI HDD (12ms,256K cache buffer)	$895.00
Fujitsu M2624T 520MB IDE HDD (12ms, 5yr warranty)	$920.00
Fujitsu M2624FA 520MB SCSI HDD (12ms, 5 yr warranty)	$985.00
Fujitsu M2266SA 1.2GB SCSI HDD (12ms, 5yr warranty)	$1375.00
Fujitsu M2652S 2.0GB SCSI HDD (12ms, 5yr warranty)	$2485.00
Maxtor MX-7120A 120MB IDE HDD (15ms)	$268.00
Maxtor MX-7120S 120MB SCSI HDD (15ms)	$315.00
Maxtor MX-7213A 213MB IDE HDD (15ms)	$370.00
Maxtor MX-7213S 213MB SCSI HDD (15ms)	$460.00
Maxtor LXT-340A 340MB IDE HDD (13ms)	$590.00
Maxtor LXT-340S 340MB SCSI HDD (13ms)	$600.00
Maxtor LXT-535A 520MB IDE HDD (13ms)	$880.00
Maxtor LXT-535S 520MB SCSI HDD (13ms)	$940.00
Maxtor XT-8760SH 675MB SCSI HDD (16.5ms)	$1195.00
Maxtor PO-12 1.2GB SCSI HDD (13ms)	$1475.00
Maxtor P1-17S 1.7GB SCSI HDD (13ms)	$1675.00
Quantum ProDrive ELS 42MB IDEHDD (19ms)	$170.00
Quantum ProDrive ELS 85MB IDE HDD (17ms)	$212.00
Quantum ProDrive ELS127MB IDE HDD (17ms)	$285.00
Quantum ProDrive ELS 170MB IDE HDD (17ms)	$310.00
Seagate ST-351AX 42MB IDE HDD (28ms)	$155.00
Seagate ST-3144 130MB IDE HDD (15ms)	$270.00
Western Digital AC280 80MB IDE HDD (17ms)	$212.00
Western Digital AC2120 120MB IDE HDD (15ms)	$275.00
Western Digital AC2170 170MB IDE HDD (14ms)	$300.00
Western Digital AC2200 209MB IDE HDD (13ms)	$365.00
Western Digital AC2340 340MB IDE HDD (13ms)	$585.00
SyQuest SQ555 44MB SCSI Removable Disk Drive	$290.00
SyQuest SQ5110 88MB SCSI Removable Disk Drive	$345.00
SyQuest SQ400 44MB Cartridge	$75.00
SyQuest SQ800 88MB Cartridge	$108.00
SyQuest SQ01 SCSI Adapter w/Software	$45.00
SyQuest External Kit	$115.00
Colorado Memory System JT-10 120MB Parallel Port Tape Backup	$395.00
Colorado Memory System JT-20 250MB Parallel Port Tape Backup	$450.00
Colorado Memory System DJ-10 120MB Tape Backup	$195.00
Colorado Memory System DJ-20 250MB Tape Backup	$245.00
Colorado Memory System AB-11 External Adapter Kit	$39.00
Colorado Memory System KE-09 External Drive Kit	$80.00
Colorado Memory System FC-10 500Kb/s-1Mb/s Adapter Kit	$90.00
Colorado Memory System TC-15 Data Compression Adapter Kit	$189.00
Summit SE-120 120MB Tape Backup w/PC Tool Backup Software	$198.00
Summit SE-250 250MB Tape Backup w/PC Tool Backup Software	$253.00
Summit SE-305 305MB IDE Tape Backup w/SummitSafe Software	$335.00
3M DC2120 120/250MB Mini Data Cartridge	$21.50
Mitsumi Internal CD-ROM w/Interface	$225.00
NEC CDR-74 External SCSI CD-ROM/MPC	$625.00
NEC CDR-84 Internal SCSI CD-ROM/MPC	$560.00
Sony CDU-31A Internal CD-ROM Drive w/Interface	$275.00
Sony CDU-535 Internal CD-ROM Drive w/Interface	$325.00
Sony CDU-541 Internal SCSI CD-ROM Drive	$465.00
**** CD Package - MultiMedia Encyclopedia, The Animals! (The San Diego Zoo) Reference Library, US Atlas / World Atlas, CD Game Pack II*	*$120.00*

PRINTERS

Citizen 200GX Printer (9pin/213cps/80col/color option)	$164.00
Citizen GSX-230 Quiet Printer (24pin/color option)	$248.00
Citizen GSX-240 Quiet Printer (24pin/300cps/80col/color option)	$315.00
Citizen GSX-145 Printer (24pin/192cps/132col/color option)	$375.00
**** Color Kit for Citizen 200GX, GSX-230 or GSX-240*	*+45.00*
Hewlett Packard DeskJet 500 InkJet Printer	$415.00
Hewlett Packard DeskJet 550C Color InkJet Printer	$735.00
Hewlett Packard LaserJet IIP Plus Laser Printer	$815.00
Hewlett Packard LaserJet IIIP Laser Printer	$975.00
Hewlett Packard LaserJet IV Laser Printer	$1435.00
NEC SilentWriter Model 95 w/2MB Postscript Printer	$1395.00
Panasonic KX-P1180i Printer (9pin/240cps/80col)	$159.00
Panasonic KX-P1123 Printer (24pin/240cps/80col)	$196.00
Panasonic KX-P1124i Printer (24pin/300cps/80col)	$289.00
Panasonic KX-P2180 Quiet Printer (9pin/240cps/80col/color option)	$178.00
Panasonic KX-P2123 Quiet Printer (24pin/240cps/80col/color option)	$248.00
Panasonic KX-P2124 Quiet Printer (24pin/320cps/80col/color option)	$328.00
Panasonic KX-P2624 Quiet Printer (24pin/300cps/132col)	$398.00
**** Color Kit for Panasonic KX-P2180, KX-P2123 or KX-P2124*	*+45.00*
Panasonic KX-P4410 Laser Printer (5ppm/512K/300dpi)	$628.00
Panasonic KX-P4430 Laser Printer (5ppm/1MB/300dpi)	$898.00
Okidata OL400P LED Page Printer	$598.00
Okidata OL810 LED Page Printer	$1048.00
Okidata OL830 LED Page Printer	$1278.00
Okidata OL840 Postscript Printer	$1598.00
Star NX-1001 Multi-Font Printer (9pin/180cps/80col)	$139.00
Star NX-2430 Multi-Font Printer (14pin/240cps/80col)	$228.00
Star NX-2420R Rainbow Color Priner (24pin/250cps/80col)	$289.00

KEYBOARDS

BTC 5339SX 101keys Keyboard	$25.00
Focus-2001 101keys Keyboard w/Hard Dustcover (Click)	$42.00
Focus-6000 101keys Keyboard (Soft click)	$36.00
Focus-8000 111keys Keyboard (Calculator, Soft click)	$46.00
Focus-9000 128keys Keyboard (Programmable, Click)	$69.00
Fujitsu-4700 101keys Keyboard	$47.00
Honeywell-101WN 101keys Keyboard (3yr. warranty)	$40.00
KT-2000 101keys Keyboard (Keytronic made)	$42.00
MaxiSwitch 2191 124keys Programmable Keyboard	$69.00

CHASIS (CASES)

CS-20 Baby AT Case w/200W UL P.S. (3x5.25",2x3.5")	$84.00
CS-35 Mid Vertical Case w/230W UL P.S. (3x5.25",3x3.5",Digital)	$99.00
CS-36 Full Vertical Case w/230W UL P.S. (6x5.25",2HD,Digital)	$135.00
CS-300GTS Full Vertical Case w/300W UL P.S. (7x5.25", Double fan)	$185.00
CS-510 Baby AT Case w/200W P.S. (3x5.25",1x3.5")	$66.00
CS-931 Mini Vertical Case w/230W P.S. (2x5.25",3x3.5",Digital)	$65.00
CS-932 Mini Vertical Case w/230W P.S. (2x5.25",3x3.5")	$63.00
CS-923 Mid Vertical Case w/230W P.S. (3x5.25",3x3.5",Digital)	$92.00
CS-912 Full Vertical Case w/230W UL P.S. (4x5.25",2HD,Digital)	$118.00
Diamond Series: (Black color model available +$3.00)	
CS-130 Full Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$145.00
CS-230 Mid Vertical Case w/250W UL P.S. (4x5.25",2HD,Digital)	$135.00
CS-330 Mini Vertical Case w/220W UL P.S. (2x5.25",3x3.5",Digital)	$86.00
CS-530 Desktop Case w/250W UL P.S. (2x5.25",2x3.5",2HD,Digital)	$98.00
CS-730 Baby AT Case w/220W UL P.S. (2x5.25",1x3.5,1HD,Digital)	$90.00
CS-830 Slim Line Case w/220W UL P.S. (1x5.25",1x3.5",1HD,Digital)	$89.00
2nd Fan for Diamond Series cases (CS-130,CS-230,CS-530)	*$10.00*

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Intel 387SX Math Coprocessor	$85.00
Intel 387DX Math Coprocessor	$90.00

For systems see list on front pages

continued from page 64

what's perhaps the most interesting breakthrough product yet—the Personal Communicators, tablet-like communications devices that exchange files with PCs, send and receive faxes and email via cellular modem, run GO's PenPoint operating system, and support a full suite of robust pen-based applications. Derived from alliances with companies from AT&T (whose Hobbit chip is an integral part of the machine's architecture) to Sitka (whose PenTOPS handles its connectivity), the new machines are expected to open a wide range of options for mobile professionals and drive the development of many new ancillary markets.

Nicholas A. Samuel

Chairman and CEO

Insignia Solutions

Fortunately for Apple, Sun, and many others, there are many reasons for choosing non-DOS hardware. However, once customers have bought into the alternative platform, they often find themselves needing to run DOS or Windows applications. Enter Insignia, which has, since the first version of SoftPC for Mac, enabled users to run the DOS software they often need on the hardware they love. With current versions for Mac, NeXT, and a variety of other workstation platforms, Insignia's software is a key component of increasingly common mixed computing environments.

Jerry Sanders

Chairman and CEO

Advanced Micro Devices

While the courts have dealt AMD a few recent setbacks in the 486 area, requiring it to develop its own microcode rather than use Intel's, Sanders has enjoyed some significant triumphs in the past year. Probably most significant is the increasing acceptance of the company's 386 chips among PC-compatible vendors, particular in the portable market where AMD's low power requirements constitute a significant advantage for the battery-dependent.

A side effect of AMD's success and an unmitigated boon to clone buyers is that it has forced Intel to become highly competitive in the pricing and features of its 80386 and 80486 product lines.

A further side effect is that Intel, stung by its competitors' legal ability to name its chips with the same numbers as their Intel counterparts, exerted considerable effort in picking a new, distinctive, and trademarkable name for its new CPU line, which will be called not 80586 but "Pentium." Judging by the initial response from the competition, there will be plenty of chips called 586 anyway...

Jack Schoof

President and CEO

Artisoft

Entrepreneur Schoof revolutionized the PC networking market with LANtastic, a peer-to-peer networking system which has become wildly popular due to its solid foothold in the dealer channel and its aggressive pricing. So well has LANtastic done that giant Novell felt compelled to go up against it with NetWare Lite, which has failed to make much of a dent in its sales.

Looming on the horizon, though, is Microsoft, with Windows for Workgroups, which includes peer-to-peer networking as part of an integrated (and affordable) package. Time will tell, but Schoof has triumphed over formidable challenges before.

John Sculley

Chairman and CEO

Apple

When Sculley (with a BA in architectural design and an MBA) appointed himself Apple's chief technology officer in 1990, there was a fair amount of scorn and derision.

Very few people are laughing now, as the PowerBook line hit the $1 billion mark even before the introduction of new models in the fall and appears to be still gaining momentum.

And, as the Macintosh slides toward commoditization, it's clear that Apple's retaining its innovative edge, with Newton (the first of the Apple Personal Digital Assistants, one of Sculley's favorite projects) due in early '93 and various breakthroughs in such technologies as multimedia and wireless networking waiting in the wings.

And, while the alliances with IBM (resulting in the formation of Taligent and Kaleida) and Microsoft (resulting in Apple's active support of the Windows platform) are probably the most startling in historic terms, Sculley has also formed joint-development pacts with companies including Sony, Toshiba, and Sharp Electronics, moving ever-further from Apple's former emphasis on closed, proprietary architectures.

Sculley appears to have a clear vision of the industry's multifaceted future and Apple's role in it. He recently told *Forbes ASAP*'s Rich Karlgaard: "What Apple can bring is a human-centric view of the world. There is no company other than Apple that is more passionate about making technology accessible, and even invisible, to people so that they can do things with it and not have to get caught up in the expert jargon. Can we put those two ideas together—a human-centric passion along with a revolution in digital communications? That's really the vision I'm driving at Apple."

Jonathan Seybold

President

Seybold Seminars

One of the industry's leading and most intelligent catalyzing forces, Seybold has a way of bringing people and technology together in interesting and useful ways. His conferences provide an indispensable forum for publishing and multimedia vendors to showcase their wares, and for professionals and their clients to grapple with the problems and opportunities that emerge as everything becomes digital.

Richard A. Shaffer

Founder and Principal

Technologic Partners

For the entrepreneurial and investment community, Shaffer's conferences and publications (which include the *ComputerLetter* and brand-new *VentureFinance* newsletters) and a column in *Forbes*, provide a unique and indispensable information resource. He offers insightful, thoroughly researched analysis of industry trends, emerging markets, and how shrewd investors and companies can transform them into opportunities.

Roger Sippl

Chairman

Phillip White

President and CEO

Informix

Sippl and White have faced some formidable challenges in recent years, positioning their company and its technology to address the rapidly changing nature of data-handling needs. However, 1992 found their efforts paying off and their product line's sophisticated capabilities edging out the competition for a number of lucrative government contracts. While garnering record-breaking earnings during 1992, Sippl and White also expanded the company's global operations significantly, particularly in Mexico and South America where Informix is finding enthusiastic acceptance in goverment and corporate installations.

Michael Slater

Editor and Publisher

Microprocessor Report

SPARC? MIPS? Intel? Cyrix? AMD? Alpha? Hobbit? With a bewildering array of CPU standards and variants arriving on the scene, the technical community has a compelling need for in-depth information on the current state of silicon. Slater's newsletter and annual conference have become vital resources for getting this information to the people who need it.

Michael Solomon

President and Co-CEO

Light Source

In this Larkspur-based startup, Solomon leads a small group of multimedia experts in creating some genuinely revolutionary technology. The company's first product, Ofoto, was initially bundled with Apple scanners in the Mac and Windows markets, and then shipped as a standalone product. To those accustomed to the dubious results produced by scanning photos with earlier technology, Ofoto's ability to deliver faithful, high-quality reproduction is little short of life-changing. The product has brought professional-quality output within the economic reach of most users and promises to make those usually hideous LaserWriter approximations of halftones a thing of the past.

Robert D. Steele

President

Open Source Solutions

Steele, a veteran of the Marines and government intelligence organizations, founded the nonprofit Open Source Solutions, saying, "Never before has the intelligence community focused so directly on the need to take greater advantage of commercial information services. It is my belief that a new relationship between government and the private sector's information brokers is going to emerge as a positive outcome of our current fiscal crisis."

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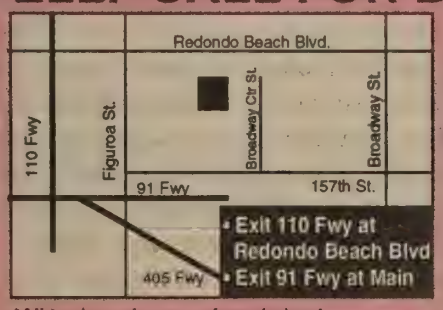

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In December the organization put on the first symposium on National Security and National Competitiveness: Open Source Solutions. In the course of the three-day conference, presentations ranged from Dr. James Holden-Rhodes of Los Alamos on "Divining Secrets: Open Source Intelligence in the War on Drugs" to Jane's Information Group on "An Information Vendor's Perspective on the Changing Information Environment and Opportunities for Government-Private Sector Cooperation" to John Perry Barlow on "EFF and the National Public Network."

Bruce Sterling

Author

The Hacker Crackdown

"Early on, it seemed possible—maybe even likely—that the crackdown could successfully combine the best of both worlds. The arrest of hackers would be heavily publicized. The actual deeds of the hackers, which were technically hard to explain and also a security risk, would be left decently obscured. The threat hackers posed would be heavily trumpeted; the likelihood of their actually committing such fearsome crimes would be left to the public's imagination. The spread of the computer underground, and its growing technical sophistication, would be heavily promoted; the actual hackers themselves, mostly bespectacled, middle-class, white, suburban teenagers, would be denied any personal publicity.

"It does not seem to have occurred to any telco official that the hackers accused would demand a day in court; that journalists would smile upon the hackers as 'good copy'; that wealthy high-tech entrepreneurs would offer moral and financial support to crackdown victims; that constitutional lawyers would show up with briefcases, frowning mightily. This possibility does not seem to have ever entered the game plan."

So writes science fiction author Sterling, who was diverted from his usual pursuits into researching and chronicling the often-bizarre clash in 1990 between law enforcement and the telephone companies on the one hand and the computer underground on the other. The immediate impetus for his concern was the fear that if neighbor and game publisher Steve Jackson could have his business shut down and his equipment confiscated, apparently for the "crime" of publishing cyberpunk fiction, cyberpunk author Sterling might be next.

The reality, of course, turned out to be considerably more complex, and this well-researched account of such matters as the notorious E911 document, Operation Sun Devil, and the creation of the Electronic Frontier Foundation is an indispensable resource to anyone trying to make sense of the legal and social issues of the online world.

David Sun
John Tu

Cofounders

Kingston Technology

Topping this year's *Inc.* 500 list of fastest-growing privately held companies in the US, the company Sun and Tu founded in 1987 to take advantage of the impending increase in demand for memory owes its success (and phenomenal productivity of $1.8 million per employee) to more than the sudden demand for RAM-hungry graphical interfaces.

The Fountain Valley company exemplifies the emerging trend toward flattened hierarchies, just-in-time inventories, fanatical quality control (Kingston tests 100% of its product before shipping), and rapid adjustment to changing markets with new innovations. The result, according to *Inc.*, is a 45% market share and a growth rate of 117,000%. The rest of the industry could learn a thing or two from these guys...

Edward D. Thomas

President

Hyundai Information Systems

Clones from Korea are nothing new. A Korean vendor moving its entire PC operation to San Jose, on the other hand...

Since Hyundai announced this dramatic move of everything from PC product development to manufacturing to California, Thomas has worked aggressively to position the extensive PC product line against its entrenched competitors in the high- and low-end markets. Strategic alliances with Microsoft, Novell, and Intel, and marketing channels from direct sales and support to Bizmart, have made Hyundai a contender in the marketplace while creating new jobs in the midst of a recession.

Bill Tobin

Cofounder

PC Flowers

In 1989, entrepreneur Tobin took a look at the online marketing capabilities offered by Prodigy and other services and decided that this was the perfect way to sell flowers. The leading flowers-by-wire service, FTD, was initially resistant to the notion, but in 1990 PC Flowers debuted on Prodigy as the 25,000th-ranked among FTD's 25,000 members. With a current presence not only on Prodigy but on RBOC gateways nationwide, PC Flowers is now the #2 FTD member in the country, and plans to expand into Interactive Cable TV in 1993.

Deborah Triant

President and CEO

Sitka

The advent of System 7 may have essentially eliminated the need of Mac networks for TOPS, but Sitka has continued to innovate technologically. Its PenTOPS client and PenCentral server software enable EO's revolutionary Personal Communicators to connect with drives, printers, and gateways to Novell and LAN Manager networks.

Another of Sitka's radical moves in 1992 had nothing to do with technology per se, but with solving the problems related to marketing network products through the dealer channel. Historically, while customers may buy their initial setup from their local dealer or VAR, they are quite likely to buy elsewhere when it comes time to expand, often going to direct sales or mail order. This, in turn, is a profound disincentive for the dealer to carry and support the product line in the first place.

Sitka cleverly addressed this situation with its Customer for Life program. When a customer decides to expand the network, Sitka's proprietary expansion and serialization technology allows the addition of more nodes directly over the phone. And at that time, the originating dealer and distributor receive commissions directly from Sitka.

As Triant said at the April announcement, "Every reseller has experienced the frustration of spending weeks or months selling the benefits of a network solution, only to watch the customer purchase from a different dealer who cut the price by 10%. The Customer for Life program ends that frustration. It substantially improves reseller profit margins and guarantees that the reseller who provides the customer with the initial network reaps the incremental profit as that network grows."

Ted Waitt

President and CEO

Gateway 2000

When Waitt and cofounder Mike Hammond (now vice president of product development) started Gateway 2000 in 1985, their first business involved selling system enhancement products to owners of orphaned Texas Instruments machines. This was a surprisingly lucrative endeavor, but they realized (not unlike enterprising Texas student Michael Dell) that the future was in mail-order, custom-configured PC compatibles. According to a recent survey by IDC, Gateway has surpassed all other brands in PC market share—it has 3.6% of the PC market, compared to Compaq's 3.5% and Dell's 2.1%.

While other PC hardware vendors have suffered in recent recessionary years, Gateway just achieves new levels of prosperity—it was #1 on the 1991 *Inc.* 500 list of fastest-growing private companies, and #2 in 1992. Waitt attributes this success to the company's ability to buy high-quality components at attractive prices because of its volume: "We buy the best components in large volumes and pass these savings on to our customers. Our pricing structure is based on prices we receive for components, not market factors. Therefore, we offer lower prices and sell thousands of systems, which enables us to buy more components in larger volumes at even lower prices."

All in all, it's been a boon to the economy of South Dakota, not a traditional hotbed of high-tech.

John Walker

Programmer

Autodesk

In a sense, Walker's now-fabled Information Letter #14, "Autodesk: The Final Days" and its galvanizing effect on the company he cofounded epitomize the current trends toward quickly responsive, non-hierarchical corporate management. Increasingly concerned with the ascendancy of the bean-counters and the encroaching sense of complacency of the company, he launched the letter in the company email and achieved a dramatic turnaround, culminating in the arrival of new CEO Carol Bartz.

Not long after our May interview with Walker ran, we received some email from a longtime Autodesk employee about the situation.

"How a company can go very, very bad very, very quickly is nothing new," he said. "We've all seen it before. But a company turning it around and

continued on page 151

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intel inside

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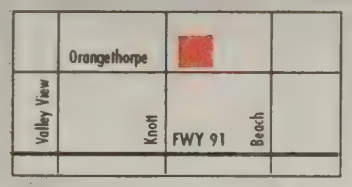

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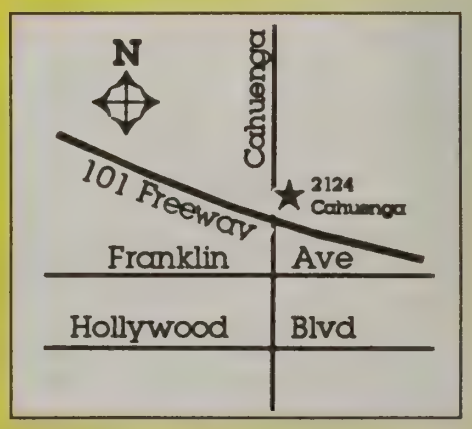

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continued from page 146

regaining its soul, well, I can't think of any example offhand. I always expected Autodesk to turn to shit—all companies do, no big story there—but I certainly never expected it to turn around."

Judge Vaughn Walker

US District Court

Walker, the judge in charge of the notorious Apple/Microsoft look-and-feel suit, caused a flurry of dubious and self-serving pronouncements from both companies when he drastically narrowed the scope of issues to be considered in the suit, discarding most of Apple's broader claims. In general he has shown a depth of understanding of the technical issues that's somewhat unusual in the legal community, and it appears that his impending decision on the remaining issues will rest on a well-reasoned foundation.

D. Bruce Walter

President

GRiD

Pen-based computing is nothing new to GRiD, which has been successfully selling handwriting-based systems to vertical-market clients for years. However, its introduction of the GRiD Convertible in 1992 marked a strong entry into the horizontal market. It's a lightweight notebook-sized computer, which accepts handwritten input on its screen and includes a conventional keyboard for running DOS and Windows applications. Unlike the ill-fated Momenta, which pioneered this concept last year, the Convertible is compact and easy to carry around, and, rumor has it, already being copied extensively by many notebook-computer vendors.

John Warnock

Chairman and CEO

Adobe

While there's been quite a proliferation of font technology over the last few years, all of it trying to compete with Adobe's PostScript, Warnock's enjoyed the vindication of seeing PostScript adopted as a standard by more and more vendors, including many who originally thought they could do without it or make do with a clone—recent converts include Sun, which is including Display PostScript (first introduced on the NeXT platform) as part of the Solaris operating system.

And Adobe's PostScript-based graphics products are on the move to a number of new operating platforms—long available only on the Macintosh, Photoshop will have Windows, Silicon Graphics, and Sun versions in the near future.

But Warnock isn't resting complacently on existing products—due in early 1993 are the first shipments of the long-awaited Adobe Acrobat (formerly Carousel), a technology intended to let users handle and exchange documents (fax, sound, graphics, video, etc.) over diverse hardware platforms and software applications.

Jim Warren

Columnist

Maybe it's just the election year, but we've received quite a bit of positive feedback this year about Warren's columns and other efforts to bring about improved access to computerized public records, an important tool as "electronic democracy" becomes a buzzword. We agree that Jim's doing vitally important work in restoring public power to its proper owners; we'd like to add this salute to the chorus and encourage him to keep up the good work.

Ken Wasch

Executive Director

Software Publishers Association

Whatever you may think of the SPA's zealous "Software Police" approach to copyright enforcement ("One call to the Piracy Hotline is all it takes for the 'Software Police' to come knocking at your computers," a recent Associated Press article began), there is little doubt that Wasch is doing an extremely effective job of representing the interests of member organizations.

The SPA's stick-and-carrot approach to combating software piracy ranges from a self-auditing program and consciousness-raising videos to the enactment of legislation forbidding commercial software libraries and, most recently, imposing prison terms of up to five years and fines up to $250,000 for making ten illicit copies of a program or copying more than $2500 worth of software.

But in other legislative efforts, the SPA was able to persuade the Feds to relax export restrictions on products incorporating RSA's encryption technology, allowing US software vendors to compete against foreign companies already using the technology.

Maurice Weitman

General Manager

The WELL

After a long search, longtime WELL denizen Weitman was selected to take over the reins from departing director Cliff Figallo, who has since moved on to EFF's Massachusetts headquarters. With an intrepid staff, Weitman keeps things running on Whole Earth's renowned and unique conferencing system, which took on a whole new dimension in 1992 with the addition of Internet access, resulting in an influx of new and interesting users from sites all over the world.

Ken and Roberta Williams

Chairman, President, and CEO/Member, Board of Directors

Sierra On-Line

An enthusiastic reader wrote to sing the praises of author Roberta Williams for the latest release in the perennial King's Quest series, Heir Today, Gone Tomorrow. Indeed, most of Sierra's product line garners both critical acclaim and enviable sales, from children's software to the escapades of the ever-popular slimeball Leisure Suit Larry.

One of the few computer game houses that's prospered over the industry changes of the last decade, Sierra On-Line is far from complacent—among its recent innovations, reflecting the impact of telecommunications on the computing industry of late, is The Sierra Network, a low-cost online gaming network that lets geographically distant subscribers play computer games with each other. "Just as the introduction of television revolutionized home entertainment, and the telephone put faraway friends and loved ones just a finger's walk away, TSN is opening up a whole new world of interactive entertainment, social interaction, and good old-fashioned fun to computer owners," says Ken Williams.

When fiber to the home gets here, Sierra On-Line seems to have a few ideas about what to do with it.

Allen Yu

Chairperson

UNSC Investment Group

Successful clone-industry entrepreneur and former NBI president Yu was instrumental in forming this organization for the purpose of creating CompuExpo, a new international trade show specifically aimed at the PC clone community, whose members often felt either lost at COMDEX or excluded by the high price of exhibiting there. The first show was held in Las Vegas in September and the 1993 event already has commitments from US and offshore vendors including IBM itself.

Says Yu, "We are committed to delivering a high-quality, low-cost, partnership-building trade show to our exhibitors and attendees for the long term. We are committed to holding an international show in Las Vegas on an annual basis, and we will continue to carry the message that a profitable, industry-wide alternative exists to other trade shows. We encourage all customer-driven, competitive companies to join with us in building the Second Ten Years of the PC Industry."

Ed Zander

President

SunSoft

A key element in Sun's continuing success and expansion into the PC power-user marketplace, Zander's been very effective at delivering new versions of the Solaris operating system, a key component in the strategy. As a shrewd move to make the Sun platform an attractive option to current Intel users, SunSoft has shipped an Intel-based version as well as a SPARC-based version of Solaris, allowing disparate machines to work together or separately.

Pierluigi Zappacosta

President and CEO

Logitech

PHOTO: JOCK McDONALD

From a small software startup ten years ago, cofounder Zappacosta has made Logitech the premier source worldwide for computer-humanizing devices from mice to digital cameras. In addition to introducing a host of market-developing innovations under its own label (including ScanMan scanners, FotoMan cameras, a full range of ergo-nomic mice and more), Logitech provides OEM components to hardware vendors around the globe, including Apple, Acer, Compaq, and Hewlett-Packard. And, when pen-based computing arrives, Logitech will be there—it was recently chosen as the supplier of digitizing technology for GRiD's palm-pad computer. ■

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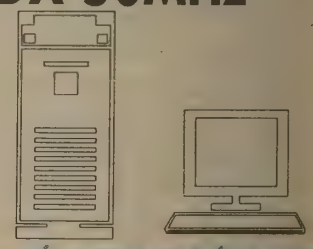

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- DUAL IDE FD/HD CONTROLLER
- AT I/O: 2 SERIAL/1 PARALLEL/1 GAME
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- 14" 1024 X 768 0.28 DOT SVGA MONITOR
- 101 ENHANCED KEYBOARD

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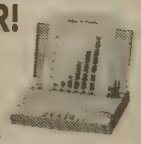

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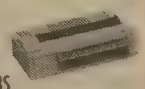

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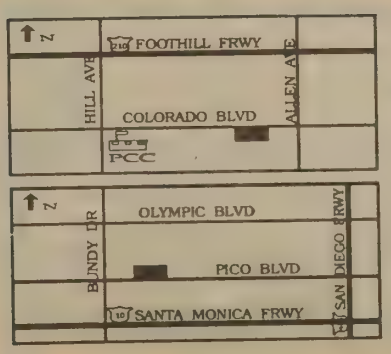

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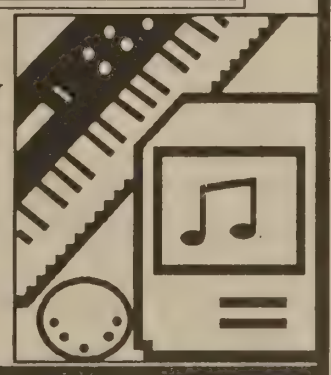

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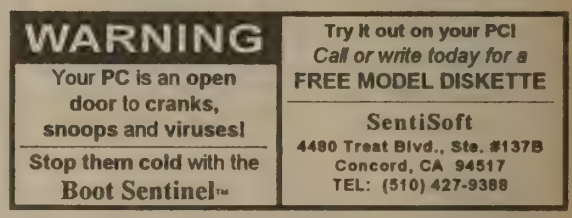
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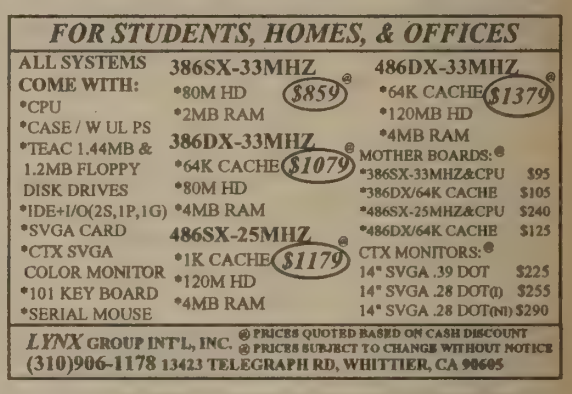

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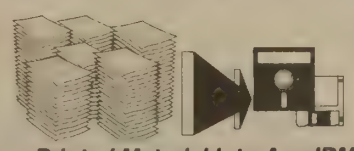
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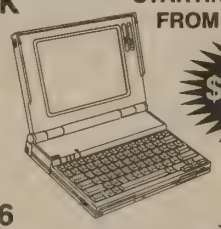

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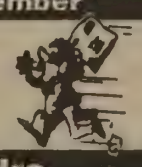

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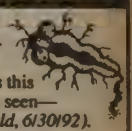

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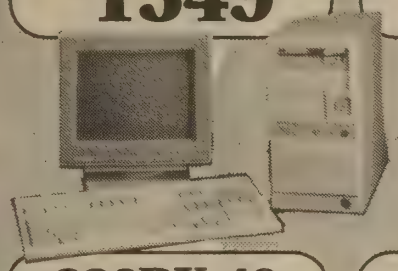

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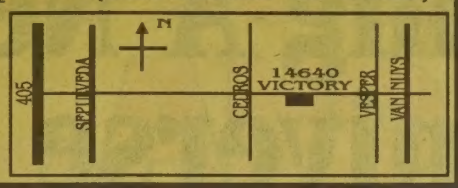

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Developing A New Theory Of The Universe

Or, Closer To Home, Cow Chips And Technology

BY JOHN C. DVORAK

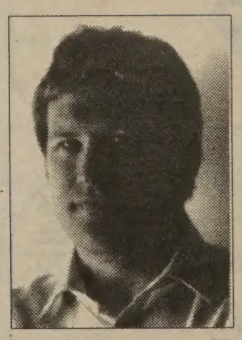
DVORAK'S LAST COLUMN

The Silicon Valley of the Northeast lies along a corridor called Route 128—a throughway through Massachusetts. Of all the Silicon Valleys in the country Route 128 is probably the dullest and most boring—especially in winter when it's drab and brown.

That's what I always thought until I started to look at the other pockets of high-tech activity. They are all dull and boring. Worse, they reflect an agrarian mentality that seems archaic in today's age.

Even the name "Silicon Valley" has a farming ring to it. Curiously, there is no real Silicon Valley in Santa Clara. There are various industrial parks here and there that have excessive numbers of high-tech firms, but there is no concentration that would resemble anything like, say, the garment district of New York City.

Hubs of activity permeate the country, usually cropping up where some old-time high-tech firm once dominated the local scene. In and around Beaverton, where Tektronix grew up, there is a slug of little spinoffs. Around Boeing in Seattle, there is Microsoft and Nintendo and a lot of engineering and software companies. Around Hewlett-Packard in Palo Alto formed the loose association called Silicon Valley. In Maynard there is Digital.



© 1993 by John C. Dvorak. All rights reserved. *John C. Dvorak graduated from the University of California. He is a contributing editor of* PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

This phenomenon of dispersion has always fascinated me because it reminds me of that old computer game, LIFE. You throw a group of organisms into a spot, and they reproduce and grow and die and fight and shrink and grow and, if you're lucky, stabilize. This is supposed to represent a population. It starts with a critical mass and grows. If the attempt to create a critical mass falls short, the little population dies fast. It's the damndest thing to watch.

If you watch the game of LIFE long enough and equate it with the computer scene, you soon believe that the mathematics are more important than the products. Look at the clone makers. The mass of them in Texas, and especially around Austin, has made them all thrive.

On the other hand, we have two of the early conceptualizers of modern clone marketing in Minnesota. Minnesota's starter crystal was Control Data, from which Cray emerged. The two clone makers are Northgate and ZEOS. Both companies make credible machines, and both have led technologically in one category or another. Still, Northgate had severe financial problems and ZEOS has been rethinking strategies.

Meanwhile, back down in Texas, nobody can tell me what the differences are between the machines made in Texas and those made in Minnesota. The Texans are kicking butt. The variable is actually not related to the machines but to the infrastructure, the people, and the inexplicable. Maybe it's the weather. Take Control Data (please!): Why did it become such a dud of a company?

And in Sioux Falls, South Dakota, Gateway 2000 is doing very well and it is itself the starter crystal.

This is all too much like the game of LIFE, one aspect of which is that you seed an area and see what happens. Where is the planning? There is no planning. It's all a matter of luck. It's just like incompetent farming.

Here's where the geographic aspects of high tech get interesting. If we look at it from a different perspective. Preindustrial, low-tech farming.

On the surface, this just looks like decentralization as the more aggressive companies move out of the big cities and into more rural environments. It's not. It's a return to the farm, as it were, only the farm is being turned into an industrial park. In the Santa Clara Valley and around Fremont, some of the world's greatest farmland was turned into industrial parks and housing tracts for high-tech workers. In fact most of the modern high-tech areas were once farmlands. Again, the best example is Gateway 2000 in South Dakota. Apple is on old farmland too.

Now some companies are in the woods (Microsoft, Borland), a few in the city (Lotus). Note, though, that most high-tech firms are spread all over the place. There is nothing like the steel mills of the Ruhr valley in Germany. High tech is in San Diego, Phoenix, New Hampshire, and Baton Rouge. In fact, it's ridiculous. The decentralization of American business to the extent that high tech is decentralized is ludicrous. It makes no sense. There are too many pockets of activity. While decentralization is good to a point, there has to be a limit. The only beneficiaries of this are the delivery systems operators.

I've always felt that the high-tech business was reminiscent of the farming community. There is a lot of back fence chit-chat, and the companies exchange workers as though they were farm hands. Itinerant farm hands, in many cases. The fact that most of these companies actually located themselves on abandoned farmland is further evidence of the connection and the mentality.

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While it's interesting, the fact is that the computer business is not farming. When you see the grand structures built by the industrialists of the last century and compare them to the industrial park of today you have to wonder: Where is the progress? Today's "campus"—no matter where it is located—is more sterile and depressing than the worst New England mill.

I have no suggestions on how to reverse this trend. I can't prove that it's bad. I can't figure out how the business can be centralized and made more efficient. All I can do is make the observation that these farmland pockets of activity are ridiculous. ■

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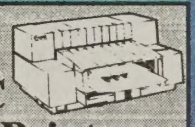

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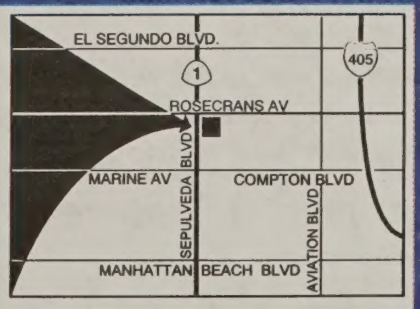

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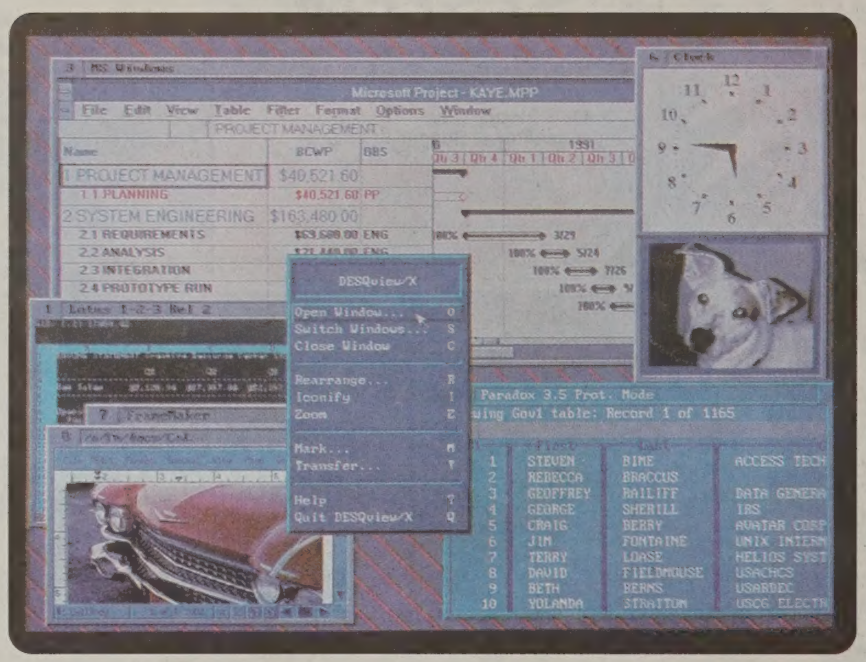

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